

THE APPLE SNAILS OF THE AMERICAS
(MOLLUSCA: GASTROPODA: AMPULLARIIDAE:
ASOLENE, *FELIPPONEA*, *MARISA*, *POMACEA*, *POMELLA*):
A NOMENCLATURAL AND TYPE CATALOG

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ABSTRACT

Ampullariidae are freshwater snails predominantly distributed in humid tropical and subtropical habitats in Africa, South and Central America and Asia. This catalog is concerned only with the American species, the majority of which are placed in the genus *Pomacea*. Species of *Pomacea* are found throughout most of South and Central America and the Caribbean, with a single species extending into southeastern USA. The other American genera are *Asolene*, *Felipponea*, *Pomella* and *Marisa*, all South American. The taxonomy of the group is heavily based on shell morphology but the true number of valid taxa remains unknown, pending revisionary work. This catalog provides the rigorous nomenclatural base for this future work by bringing together all the available and unavailable genus-group and species-group names that have been applied to American ampullariids, indicating their current nomenclatural status (species, subspecies, synonyms, etc.). The catalog lists 14 published genus-group and 307 published species-group names for American ampullariids. Of these, 7 genus-group (including 2 subgeneric) and 141 species-group (including 23 infraspecific) names are currently valid. There are 4 genus-group synonyms, 133 species-group synonyms, and 11 species-group homonyms. Also listed are 3 unavailable genus-group and 23 unavailable species-group names. The catalog provides bibliographic details for all names, details of type localities and locations of type material, and geographic distribution as far as can be ascertained given the confused state of the taxonomy. The catalog is a work of nomenclature; it is not a revisionary work of taxonomy.

Key words: Ampullariidae, freshwater snails, nomenclature, type material, North America, South America, Central America.

INTRODUCTION

Ampullariidae are freshwater snails predominantly distributed in humid tropical and subtropical habitats in Africa, South and Central America and Asia. They include the largest of all freshwater snails (*Pomacea urceus* can attain a shell height of 145 mm – Burky, 1974; *P. maculata* can exceed 155 mm – Pain, 1960) and frequently constitute a major portion of the native freshwater mollusk faunas of these regions. Among the seven to ten genera usually recognized, the two largest are *Pomacea*, perhaps with about 50 real species (but 117 nominally valid species recognized herein), and *Pila*, with about 30 (Berthold, 1991). Snails in these

two genera particularly are frequently known as “apple snails” because many species bear large, round, often greenish shells. The term “apple-shell” was first used by Perry (1810c) in his introduction of the name *Pomacea*, for his new species *P. maculata*, because of “its general resemblance to ... an apple” (“*Pomum*” in Latin), and not from the Greek *Πύμα*, which means an operculum.

Ampullariidae (junior synonym Pilidae; Cowie, 1997a; ICZN, 1999a) are operculate snails. They are most closely related to the Viviparidae, together with which they form the superfamily Ampullarioidea in the orders or superorders (depending on classification) Mesogastropoda of earlier authors and Caeno-

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gastropoda of more recent authors (Ponder & Warén, 1988; Berthold, 1989; Bieler, 1992; Ponder & Lindberg, 1997).

Traditional subdivision of the family, by various authors, has been into seven to ten genera, with the form of the siphon and the operculum considered diagnostically significant (e.g., Michelson, 1961). Pain (1972) briefly reviewed the history of taxonomic work on the family. More recently, Berthold (1991: 245–250) recognized ten genera (and three subgenera) with approximately 120 species. His detailed anatomical account treated representative species from each of these generic groupings. He divided the family into two subfamilies: the Afropominae (containing just a single Recent African species in the genus *Afropomus*); and the Ampullariinae, which he subdivided into the tribes Sauleini (one genus, *Saulea*, containing two African species, one Recent, one fossil) and Ampullariini (the remainder). He further subdivided the Ampullariini into the groups Heterostropha and Antlipneumata, but these divisions and names have been criticized by Bieler (1993), who reanalyzed Berthold's data using cladistic techniques. Bieler's reanalysis showed that the various groupings of genera remained more or less similar to those of Berthold, but the relationships among these groups were inconsistent. Given these inconsistencies, it seems unwise to force the various clades into a traditional hierarchy of family-group names. One of the ten genera recognized by Berthold (1991), *Pseudoceratodes* (African, fossil only), was included in the family only tentatively. Of the remaining nine genera, six contain fewer than six species each: *Afropomus* and *Saulea* are African; *Asolene*, *Felipponea*, *Pomella* and *Marisa* are South American. The three genera *Lanistes* Montfort, *Pila* (*Ampullaria* Lamarck and *Ampullarius* Montfort are junior synonyms; Cowie, 1997a; ICZN, 1999a) and *Pomacea*, containing 21, about 30, and about 50 species, respectively, comprise the great majority of species in the family. *Lanistes* (distinguished by its hyperstrophic and hence superficially sinistral shells) is African (including Madagascar). *Pila* is African and Asian. *Pomacea* is South and Central American.

This catalog is concerned only with the American species, the majority of which are placed in the genus *Pomacea*. Species of *Pomacea* are found throughout most of South and Central America and the Caribbean, with a single species, *Pomacea paludosa*, extending into the southeast USA. The genus is divided

into two subgenera, *Pomacea sensu stricto* and *Pomacea* (*Effusa*). Berthold (1991) considered *Pomacea* to be monophyletic, with *Marisa* as its sister-group, and the similarities between *Marisa* and *Pomacea* subgenus *Effusa* to be convergent (see also Pilsbry, 1933: 72–73). However, the relationships among the two subgenera of *Pomacea* and the genus *Marisa* are not well resolved (Bieler, 1993) and, at least in terms of shell morphology, the three taxa intergrade. The distinctions among these and the other American genus-group taxa have been generally not well understood. This catalog follows Berthold (1991: 248–250) regarding validity and status of genus-group names, without necessarily implying support for his taxonomic views.

One or more species of *Pomacea*, introduced to Southeast Asia and islands of the Pacific, including the Hawaiian Islands, have become major agricultural pests, notably in rice and taro but also in other crops (Cowie, 2002). However, the true identity of the species involved is uncertain, having been treated variously as *Pomacea canaliculata* (Smith, 1992; Hendarsih et al., 1994), *P. lineata* (Cheng, 1989; Laup, 1991), *P. gigas* (see Guerrero, 1991), *P. "insularis"* (see Acosta & Pullin, 1991), *Pomacea* cf. *canaliculata* (Ng et al., 1993), simply *Pomacea* sp. (Acosta & Pullin, 1991), a "hybrid [of] *Ampullaria canaliculata* and *Ampullaria cuprina*" (Anderson, 1993), and even "*Ampularius* sp. a hybrid of undetermined origin" (Lacanilao, 1990). Keawjam & Upatham (1990) recognized three species of *Pomacea* introduced in Thailand: *P. canaliculata*, *P. insularum* and an unidentified species of *Pomacea*. Mochida (1991) indicated that as well as *P. canaliculata* (which he considered frequently to have been misidentified as *P. insularum*) two other species of *Pomacea* have also been introduced to the Philippines: *P. gigas* and *P. cuprina* (the latter possibly a misidentification of *P. bridgesii*, a species that has been carried all over the world by the domestic aquarium trade – Cowie, 1995). In Japan, three "strains of *Pomacea canaliculata*" have been identified, differing in shell colour and pattern, salinity tolerance, and in aspects of reproduction and growth (Brand et al., 1990; Fujio et al., 1991). In the Philippines, the snails have even been identified as species of *Pila* (see Guerrero, 1991). In Hawaii, where four ampullariid species are recorded (Cowie, 1995), snails in an aquaculture project have been reported as hybrids of *Pomacea canaliculata* and *P. paludosa* (Nishimura et al., in Tamaru, 1996).

Ampullariid species-level taxonomy has been heavily reliant on shell morphology, yet snail shells, and especially ampullariid shells, exhibit much intraspecific variation. The taxonomy and systematics of most species have not been adequately worked since their original descriptions. The pest species (even if it turns out to be more than one species) in Southeast Asia nevertheless appears to belong to a relatively well circumscribed group of more or less closely related species from South America. However, within this group, the species and their relationships are very poorly understood. The group comprises a large number of nominal species, including *P. canaliculata*. From time to time, some of the species within this "canaliculata group" have been formally synonymized, informally linked together, distinguished as separate species, and so on. This confusion was discussed but not resolved by Alderson (1925), the most recent author to revise *Pomacea* and *Pila* widely (referring to the two genera together as "Ampullaria"). He implicitly recognized most of the species in the "canaliculata group" as a more or less closely knit group. Within this group he further recognized a number of rather vaguely defined associations of species, for instance explicitly linking *Pomacea immersa*, *P. amazonica* and *P. haustum*, although without formally synonymizing them; and informally referring to another subset of the group as "the *lineata* group". However, he did retain most species as valid. It is quite possible that, just as for the large number of Central American species synonymized under *Pomacea flagellata* by Pain (1964), many other "species" of Ampullariidae, including those in the "canaliculata group", do not deserve distinct specific status (Pain, 1960; Cazzaniga, 1987, 2002). A modern revision, involving not only conchology but also internal anatomy and molecular characters, might reduce the "canaliculata group" to as few as three species, possibly *P. canaliculata*, *P. lineata* and *P. gigas* (= *maculata* – see main catalog). Until such work is undertaken, however, the status of these various nominal species will remain obscure.

The purpose of this catalog, then, is to provide a rigorous base for this revisionary work by bringing together all the available and unavailable genus-group and species-group names in the large genus *Pomacea* and the other much smaller South American genera of Ampullariidae, indicating their current nomen-

clatural status (species, subspecies, synonyms, etc.) generally according to the most recent revisions; a total of 14 genus-group and 307 species-group names (Table 1). The catalog also provides bibliographic details for all names, details of type localities and locations of type material, if known, and geographic distribution as far as can be ascertained given the confused state of the taxonomy.

EXPLANATORY INFORMATION

Scope

This catalog lists all published genus-group and species-group names found in the literature, whether available or unavailable according to the *International Code of Zoological Nomenclature* (ICZN, 1999b), that have been applied to the Ampullariidae of North, Central, and South America, and the Caribbean region.

Arrangement and Treatment of Taxa

The sequence of genera is alphabetical. Subgenera appear in alphabetical order within genera. Genus-group synonyms are listed chronologically under the genus-group heading. All species-group names (valid and invalid, available and unavailable) are listed alphabetically within genera/subgenera. Incorrect spellings are listed only if confusion might be caused by their omission; they may also be mentioned in Remarks sections. Treatment of species-group names follows the major authoritative revisions, although few of these are recent. Names proposed as "forms", "va-

TABLE 1. Summary of the numbers of names of American ampullariid taxa (including names that are *incerae sedis*) treated in this catalog.

	Available	Unavailable	
Genus-group names	Valid genus	5	
	Valid subgenus	2	3
	Synonym	4	
Species-group names	Valid species	117	
	Valid infra-specific	23	
	Synonym	133	23
	Homonym*	11	

*Includes homonyms considered to represent valid species (10) and valid infraspecific taxa (1).

rieties", etc., and neither already synonymized nor raised to subspecific status are simply treated, along with subspecies, as infraspecific. Treatment of genus-group names also follows the most recent authoritative revisions.

In some instances in which we treat a name as a junior synonym, one or more other names automatically become synonyms of the senior synonym because they had already been treated as synonyms of the junior synonym. In some cases this results in the introduction of a new synonymy, indicated in boldface by "**N. syn.**". However, no other revisionary work has been attempted and no new taxonomic decisions have been made.

Typographical Treatment of Names

Family and genus-group headings are centered in upper case type. Valid genus-group names are listed flush left in boldface upper case type. Valid, available species-group names are listed flush left in boldface, infraspecific names preceded by a "+". Synonyms are listed in italics flush left, upper case for family and genus-group names, lower case for species-group names. In the species-group, junior homonyms are also listed in italics flush left, or in boldface italics flush left if new or replacement names have not been provided. Nomenclaturally unavailable names are listed in plain type, flush left.

Taxonomic References

The citation for the original proposal of a genus-group name follows the name. The reference consists of author(s), date of publication and page number. For species-group names, on the line following the name and indented, the name is given in its original generic combination (including subgenus if in the original description, and using the original orthography, even if incorrect) and with its original status indicated (e.g., subspecies, "var.", as necessary). The name is followed by its author(s), date of publication, page number, and plate/figure number(s). When an author published the same name as new for the same taxon in more than one place, the later citation is given in square brackets following the first citation.

The author/date citation acts as a reference to the work as listed in the Literature Cited section. If an author published more than one work in the same year, a suffix (a, b, c, etc.), indicating chronological order of publication, is

attached to the date in both the catalog text and the Literature Cited. Authors' names containing the terms "de", "d'", "von", if being of European continental origin, are cited and alphabetized in the Literature Cited by the main name, e.g., "*Ampullaria guadelupensis* Martens, 1857" in the main body of the catalog and "Martens, E. von. 1857" in the Literature Cited.

The page number cited is that on which the name first appeared. In some instances, the name first appeared on different pages, for instance in a list or key, with the actual description beginning on a subsequent page. In such cases, both page numbers are cited.

If the current status of a species-group name differs from that in the original description, this is indicated, with appropriate references, in a Remarks section below the standard entry for the species.

Type Species

For nomenclaturally available genus-group names, the type species and its method of fixation (following *Code Arts.* 66–70) are given following the literature citation.

Homonyms and Replacement Names

Homonymy of species-group names is indicated in the Remarks section under the name. In many cases, the junior homonym has already been synonymized with another earlier name, or a replacement name has already been provided. In cases in which a replacement name appears necessary, no replacement name is here provided, pending further research. We have not made an exhaustive search for possible senior homonyms.

Unavailable Names

Unavailable names are listed with full citation and a statement of why the name is unavailable, e.g., "*nom. nud.*", "first published as a junior synonym of ...", etc. No other information is provided except for explanatory details in the Remarks section, if necessary. Obviously incorrect spellings are not listed but may be mentioned in annotations.

Misidentifications

Misidentifications are not formally listed. No genus-group misidentifications are mentioned.

Species-group misidentifications are noted in square brackets or in Remarks sections, if necessary for clarity.

Miscellaneous Annotations

Under each genus-group heading, explanatory and other useful information is given immediately under the genus-group synonymy. Annotations other than those indicated in the above paragraphs are placed in square brackets immediately following the item to be clarified or, if the annotations are more extensive, placed in a Remarks section following the standard entry for the species.

Type Localities and Type Material

The type locality ("the geographical ... place of capture, collection or observation of the name-bearing type" [Code Art. 76]) is given for each available species-group name immediately following the author and citation. The location is given verbatim as published by the author, without translation. If no locality was given by the author, this is simply stated, in square brackets. Any additional interpretive or explanatory information regarding the type locality is placed in square brackets following the originally published locality, or, if extensive, in the Remarks section. However, an exhaustive attempt to determine the exact collection locality has not been made.

Location and catalog numbers of type material, if known, are given, following the type locality information. In many instances, the original descriptions did not designate a holotype or even identify a type series. Even though many of these descriptions were probably based on single specimens, it is rarely possible to determine this with certainty. Therefore, in most cases, the material known to have been used in describing a new species should be designated as a lectotype (or lectotype and paralectotype(s) if more than one specimen is present in the inferred type series) (Code Rec. 73F). Rather than designating lectotypes here, we consider such specimens to be syntypes, pending further study. The information provided is derived from the literature (citations given), and from enquiries made to numerous museums and our own study in various museums (see Acknowledgments); an exhaustive search for type material has not been made.

Distributions

The distribution (if known) of each species is given following the type locality and type material information. In most cases this information is not detailed, providing simply the country or region from which the species has been recorded in the literature. Citations for the sources of this information are provided, unless the only information available is the type locality, for which the reference has already been provided.

Museum Collection Acronyms and Type Material Holdings

The following acronyms are used for the various museum collections referred to in the catalog. The number of American taxa represented by type or possible type material in each collection, as known to us or referred to in the literature, is indicated in parentheses. Research will undoubtedly uncover additional type material in many of these collections.

AMNH	American Museum of Natural History, New York, U.S.A. (4)
ANSP	Academy of Natural Sciences, Philadelphia, U.S.A. (22)
BMNH	The Natural History Museum, London, U.K. (83)
CAS	California Academy of Sciences, San Francisco, U.S.A. (1)
CMNH	Carnegie Museum of Natural History, Pittsburgh, U.S.A. (1)
HLU	Hebrew University of Jerusalem, Israel (5)
IMLA	Fundación e Instituto Miguel Lillo, Universidad Nacional de Tucumán, Argentina (1)
MACN	Museo Argentino de Ciencias Naturales, Buenos Aires, Argentina (1)
MCZ	Museum of Comparative Zoology, Harvard University, Cambridge, U.S.A. (29)
MCSN	Museo Civico di Storia Naturale, Milano, Italy (0)
MHNG	Muséum d'Histoire Naturelle, Genève, Switzerland (8)
MHNS	Museo de Historia Natural La Salle, Caracas, Venezuela (1)
MMUE	The Manchester Museum, University of Manchester, Manchester, U.K. (1)
MNCN	Museo Nacional de Ciencias Naturales, Madrid, Spain (3)
MNHN	Muséum National d'Histoire Naturelle, Paris, France (30)
MNHNS	Museo Nacional de Historia Natural, Santiago, Chile (possibly 21)
MNRJ	Museu Nacional, Rio de Janeiro, Brasil (1)
MZUSP	Museu de Zoologia da Universidade de São Paulo, Brasil (0)

NMW	National Museum of Wales, Cardiff, U.K. (10)
NZSI	Zoological Survey of India, National Zoological Collection India, West Bengal, Calcutta, India (1)
RMNH	Nationaal Natuurhistorische Museum, Leiden, Netherlands (2)
SMFD	Forschungsinstitut und Naturmuseum Senckenberg, Frankfurt-am-Main, Germany (possibly 2)
UF	University of Florida, Florida Museum of Natural History, Gainesville, U.S.A. (1)
UMMZ	University of Michigan, Museum of Zoology, Ann Arbor, U.S.A. (5)
USNM	National Museum of Natural History, Washington D.C., U.S.A. (11)
ZMHB	Museum für Naturkunde der Humboldt-Universität, Berlin, Germany (24)
ZMUH	Universität von Hamburg, Zoologisches Institut und Zoologisches Museum, Hamburg, Germany (0)
ZMZ	Zoologisches Museum der Universität, Zürich, Switzerland (1)
ZSM	Zoologische Staatssammlung München, Germany (14)

Abbreviations

The following abbreviations are used throughout the catalog.

Art(s).	Article(s) (of the Code)
Code	<i>International Code of Zoological Nomenclature</i> (ICZN, 1999b)
fig(s).	figure(s)
ICZN	International Commission on Zoological Nomenclature
<i>nom. nud.</i>	<i>nomen nudum</i>
N. syn.	New synonymy
pl(s).	plate(s)
p.	page
pers. comm.	personal communication
Rec.	Recommendation (of the Code)
<i>s.l.</i>	<i>sensu lato</i>
spm(s).	specimen(s)
<i>s. str.</i>	<i>sensu stricto</i>
subg.	subgenus

SYSTEMATIC CATALOG

Family AMPULLARIIDAE Gray, 1824

AMPULLARIIDAE Gray, 1824: 276. Type genus *Ampullaria* Lamarck, 1799 [= *Pila* Röding, 1798].

PILIDAE Preston, 1915: 96. Type genus *Pila* Röding, 1798.

ICZN (1999a), following Cowie (1997a: 83–88), confirmed the name Pilidae as a junior synonym of Ampullariidae and invalid.

Genus ASOLENE Orbigny, 1838

ASOLENE Orbigny, 1838d: 364. Type species: *Helix platae* Maton, 1811, by subsequent designation of Gray (1847: 148).

AMPULLOIDEA Orbigny, 1841e: 379. New name for *Asolene* Orbigny, 1838 (see Pilsbry, 1933: 74).

AMPULLOIDES Orbigny, 1842c: 1. Incorrect spelling of *Ampulloidea* Orbigny, 1841.

ASOLENA Herrmannsen, 1846a: 84. Incorrect spelling of *Asolene* Orbigny, 1838.

AMPULLAROIDES Gray, 1847: 148. Incorrect spelling of *Ampulloidea* Orbigny, 1841 (see Pilsbry, 1933: 74).

Treated as a full genus following Berthold (1991: 23). Orbigny (1841e: 379) replaced *Asolene* with *Ampulloidea*, treating only *platae* Maton, 1811, but without explicitly saying that this was the only species and hence not designating it as the type. Previously (Orbigny, 1838d: 364), he had included two species (*platae* Maton, 1811, and *celebensis* Quoy & Gaimard, 1834 [the latter is now placed in *Pila* Röding, 1798]).

brownii

Ampullaria Brownii Jay, 1839: 112, pl. 1, fig. 4. River Amazon [= Brasil]. Syntype: AMNH 56107 (Boyko & Cordeiro, 2001: 16) [labeled as “figd type” in Jay’s handwriting (P. M. Mikkelsen, pers. comm. to RHC, 7 May 2002)]; possible additional syntype material: MCZ. Distribution: Brasil.

Remarks: Pain (1960: 430) stated that “[t]hrough the kindness of Dr. J. C. Bequaert and Dr. W. J. Clench [both of the MCZ], I have been able to examine the type”. This is not considered an inadvertent lectotype designation because it is not specific as to the specimen examined (Boyko & Cordeiro, 2001: 16). Synonym of *crassa* Swainson, 1823, *teste* Philippi (1852a: 34), Paetel (1887: 477), Kobelt (1913f: 189) and Pain (1960: 429).

crassa

Ampullaria crassa Swainson, 1823a: pl. 136, upper and lower figs. [No locality given.] Syntypes (“the only specimen I have” and the specimen in “the figure of Martini”) (Swainson, 1823a: pl. 136); possibly MMUE (Dean, 1936: 232; H. McGhie, pers. comm. to RHC, 28 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: Brasil, Bolivia, Peru, Ecuador, Colombia, Venezuela,

Guyana, Surinam, French Guiana (Baker, 1914: 661; Pain, 1960: 430; Geijskes & Pain, 1957: 45).

Remarks. Placed in *Limnopomus* Dall by Pain (1952: 31, 1960: 429) and Geijskes & Pain (1957: 45), but in *Asolene* Orbigny by Tillier (1980: 21), followed here.

crassa

Ampullaria crassa Orbigny, 1835a: 33. Rio Parana (republica Argentina). Syntypes: BMNH 1854.12.4.332 (13 spms.) [labeled "roissy"].

Remarks. Junior primary homonym of *crassa* Swainson, 1823, and *crassa* Deshayes, 1830 [= *Melantho ponderosa* (Deshayes, 1825), *teste* Paetel (1887: 478); not Ampullariidae], replaced by *roissy* Orbigny, 1841. Synonym of *pulchella* Anton, 1838, *teste* Gaudion (1879: 38), Ihering (1898: 50, 1919: 337) and Hylton Scott (1958: 310).

cyclostoma

Ampullaria cyclostoma Spix, in Wagner, 1827: 4, pl. 4, fig. 5. Brasilia. Syntype: ZSM 20012075 (E. Schwabe, pers. comm. to RHC, 28 July 2002; see also Fechter, 1983: 221). Distribution: Argentina, Paraguay, Uruguay, Bolivia, Brasil (Paraguay-Parana drainage) (Pain, 1960: 430).

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.). Synonym of *platae* Maton, 1811, *teste* Hylton Scott (1958: 308) and S. C. Thiengo (unpublished), followed here, although contrary to Pain (1960: 430), who retained it as a valid species in *Limnopomus* Dall, 1904, which is here treated as a synonym of *Pomacea* Perry, 1810.

exumbilicata

Helicina exumbilicata Spix, in Wagner, 1827: 4, pl. 5, fig. 4. In aquis Provinciae Bahiensis. Type material: probably lost (S. C. Thiengo, unpublished).

Remarks. Authorship is given as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Spix illustrated *exumbilicata* as a valid species, but Wagner, in writing the description, treated it as a variety of *crassa* Swainson, 1823. Synonym of *crassa* Swainson, 1823, *teste* Philippi (1852a: 73) and Pain (1950b: 72), although the latter cited Spix's pl. 4, fig. 2.

fasciolata

Helix fasciolata Spix, in Wagner, 1827: 4, pl. 5, fig. 1. In aquis Provinciae Bahiensis. Type

material: probably lost (S. C. Thiengo, unpublished).

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Spix illustrated *fasciolata* as a valid species, but Wagner, in writing the descriptions, treated it as a variety of *crassa* Swainson, 1823. Synonym of *crassa* Swainson, 1823, *teste* Pain (1950b: 72), although he cited pl. 5, fig. 2.

+ *gallardoii*

Ampullaria pulchella Gallardoii Ihering, 1919: 337. curso inferior del río Paraná hasta Corrientes, del Chaco Argentina y del señor A. de W. Bertoni, de la Asunción. Type material: not found by us in MACN, not found by us in MZUSP (cf. Dance, 1986: 214). Distribution: Argentina, Bolivia (Hylton Scott, 1958: 311).

granulosa

Ampullaria granulosa Sowerby, 1894: 49, pl. 4, fig. 24. Cayenne. Lectotype (Pain, 1949b: pl. 2, figs. 5, 6; see also Tillier, 1980: 20): BMNH 1894.6.11.1. Distribution: Guyana, Surinam, French Guiana (Vernhout, 1914a: 43; Pain, 1952: 30; Geijskes & Pain, 1957: 46; Tillier, 1980: 20)

Remarks. Placed in *Limnopomus* Dall by Pain (1952: 31) and Geijskes & Pain (1957: 45). Placed here in *Asolene* following Tillier (1980: 17). The original description was not explicitly based on a single shell, so the specimen figured by Pain as the "type" must be considered a lectotype (*Code Art.* 74.6, Rec. 73F).

impervia

Ampullaria impervia Philippi, 1851: 17, pl. 4, fig. 7 [1852b: 21]. Brasilien. Syntype: ZSM 20012067 (E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: "Brésil" (Gaudion, 1879: 31), "Bolivia, etc." (Sowerby, 1909a: 353).

Remarks. Synonym of *crassa* Swainson, 1823, *teste* Pain (1960: 429).

monticola

Ampullaria crassa var. *monticola* Vernhout, 1914b: 47, pl. 1 [not pl. 2, as indicated in the text], fig. 15a, b. Mount Cottica on the right bank of the Lawa ... altitude of 450 m ... French Guyana. Holotype: RMNH; paratype(s): RMNH. Distribution: French Guyana (Tillier, 1980: 21).

Remarks. Three specimens were mentioned in the text, but only two were figured. These were RMNH no. 132 (fig. 15a) and no.

131 (fig. 15b), but neither was specified as being the holotype. Synonym of *crassa* Swainson, 1823, *teste* Tillier (1980: 21).

naticoides

Ampullaria naticoides Orbigny, 1835a: 33. Unavailable name; first published as a junior synonym of *platae* [as "*Platea*"] Maton, 1811, not made available before 1961 (*Code*, Art. 11.6). Syntypes: BMNH 1854.12.4.337 (7 spms.).

Remarks. Locality given by Orbigny (1835a: 33) as "Rio de la Plata, provincia Buenos-Ayres (republica Argentina)". Treated as a synonym of *platae* Maton, 1811, by Orbigny (1841e: 379), Paetel (1887: 480), Sowerby (1909a: 356), Pilsbry (1933: 74) and Hylton Scott (1958: 308).

+ nubila

Ampullaria nubila Reeve, 1856c: pl. 14, fig. 65. River Salomoens. Syntypes: BMNH 20020672 (2 spms.). Distribution: Brasil, Bolivia, Peru (Pain, 1960: 430).

Remarks. Subspecies of *crassa* Swainson, 1823, *teste* Pain (1960: 430).

oblonga

Ampullaria (Pomus) crassa var. *oblonga* Nevill, 1884: 11. Brazil; Amazon Rv. Type material: possibly NZSI, not found by us in BMNH (cf. Dance, 1986: 220). Distribution: Brasil.

Remarks. Junior primary homonym of *oblonga* Swainson, 1823. Synonym of *crassa* Swainson, 1823, *teste* Paetel (1887: 480).

olivieri

Ampullaria Olivieri Deshayes, 1830a: 31. Cayenne. Type material: probably lost (Tillier, 1980: 16). Distribution: French Guiana.

Remarks. Synonym of *crassa* Swainson, 1823, *teste* Deshayes (1838: 548), Philippi (1852a: 34), Paetel (1887: 480) and Sowerby (1909a: 347).

ormophora

Ampullaria ormophora Morelet, 1857: 30. Novâ Caledoniâ [error]. Syntype: BMNH 1893.2.4.1805. Distribution: Brasil (from syntype label).

Remarks. No ampullariids are known from New Caledonia, which has therefore been considered in error (Crosse, 1871: 185). Tentatively place in *Asolene* Orbigny, based on the syntype label, on which is written "= *nubila* Reeve".

petiti

Ampullaria Petiti Crosse, 1891: 214, pl. 4, fig. 2. in flumine Amazonidum, Americæ meridionalis. Type material: MNHN (Sowerby, 1909b: 363) [not found by us]; topotype: MNHN ("coll. Jousseume"; Tillier, 1980: 19).

Remarks. Sowerby (1909a: 356) thought it to be "perhaps a variety of *A. impervia*, Phil." but subsequently (Sowerby, 1909b: 363) considered the two taxa distinct. Synonym of *crassa* Swainson, 1823, *teste* Pain (1960: 429), but treated here as a valid species, following Berthold (1991: 250; see also Tillier, 1980: 21).

platae

Helix Platae Maton, 1811: 331, pl. 24, figs. 16, 17. America australi ... Rio de la Plata. Type material: location not known to us. Distribution: Paraguay (Martens, 1857: 200; Paetel, 1873: 65, 1888: 481); Paraná (Pilsbry, 1933: 74); La Plata (Sowerby, 1909a: 356; Pilsbry, 1933: 74); La Plata and southern Brasil. "sistema del río Paraná" (Ihering, 1919: 333).

pulchella

Ampullaria pulchella Anton, 1838: 50. [No locality given]. Type material: location not known to us. Distribution: Rio Parana, La Plata, Bolivia (Sowerby, 1909a: 348).

Remarks. Synonym of *cyclostoma* Spix, in Wagner, 1827, *teste* Pain (1960: 430), but treated here as a valid species in *Asolene*, following Hylton Scott (1958: 310) and Berthold (1991: 250).

roissii

Ampullaria roissii Orbigny, 1838c, pl. 52, figs. 1–3. Unavailable name; incorrect original spelling of *roissyi* Orbigny, 1838.

roissyi

Ampullaria roissii Orbigny, 1838c, pl. 52, figs. 1–3 [given as "*Roissy*" by Orbigny (1841e: 377)]. New name for *crassa* Orbigny, 1835, *non* Swainson, 1823, *non* Deshayes, 1830. Distribution: Rio Parana, Argentina (Orbigny, 1835a: 33).

Remarks. The name *roissyi*, as given by Orbigny (1841e: 377), was an incorrect subsequent spelling (*Code*, Art. 33.3); it was not an emendation, as it was not demonstrably intentional (*Code*, Art. 33.2). However, "*roissy*" is in prevailing use, attributed to Orbigny, and is therefore deemed the correct original spelling (*Code*, Art. 33.3.1). Variety of *cyclostoma* Spix, 1827, *teste* Sowerby (1909a: 348). Synonym of *cyclostoma* Spix, 1827, *teste* Pain (1960: 430). Synonym of *pulchella* Anton, 1838, *teste* Philippi (1852a: 33), Ihering (1898: 50, 1919: 337) and Hylton Scott (1958: 310), followed here.

sloanii

Ampullaria Sloanii Férussac, 1827: 413. Unavailable name; *nom. nud.*

Remarks. Listed as from "Cayenne" by Férussac (1827: 413), Jay (1836: 47; 1839:

65; 1850: 283), Drouët (1859: 84), Gaudion (1879: 40) and Paetel (1888: 481). Listed as a synonym of *crassa* Swainson, 1823, by Tillier (1980: 21).

solida

Ampullaria solida Busch, 1859: 168. Ecuador. Syntypes: BMNH 20020683 (2 spms.). Distribution: Ecuador (Miller, 1879: 149).

Remarks. Synonym of *crassa* Swainson, 1823, *teste* Pain (1960: 429).

sowerbyi

Ampullaria sowerbyi Vernhout, 1914a: 29, pl. 1, fig. 13 [holotype]. Lawa. Holotype: RMNH. Distribution: Surinam.

Remarks. The description is explicitly based on only a single specimen. The "type" (i.e., the single specimen) is indicated as being in RMNH, and a specimen, which must be this single specimen, is figured. Synonym of *granulosa* Sowerby, 1894, *teste* Pain (1952: 30), Geijskes & Pain (1957: 45) and Tillier (1980: 20).

spixii

Ampullaria Spixii Orbigny, 1838d: 376, pl. 52, figs. 7, 8. New name for *zonata* Orbigny, 1835, *non* Spix, 1827. Distribution: "Sistema del Plata y del río Paraná ... Puerto Bertoni, Alto Paraná, en Río Grande do Sul ... y en el río Uruguay" (Ihering, 1919: 336).

Remarks. Synonym of *cyclostoma* Spix, 1827, *teste* Sowerby (1909a: 348), but treated here as a valid species, following Hylton Scott (1958: 312) and Berthold (1991: 250).

storeria

Ampullaria Storeria Jay, 1839: 112, pl. 1, fig. 5. River Amazon [= Brasil]. Probable syntype: AMNH 56107 (Boyko & Cordeiro, 2001: 16) [labeled as "figd type" in Jay's handwriting (P. M. Mikkelsen, pers. comm. to RHC, 7 May 2002)]. Distribution: Brasil.

Remarks. Considered a variety of *platae* Maton, 1811, by Jay (1850: 283). Philippi (1852a: 34, 63) could not decide its status as a real species or a synonym of *platae* Maton, 1811. Treated here as a synonym of *platae* Maton, 1811, following Martens (1857: 210) and Gaudion (1879: 37).

zonata

Ampullaria zonata Orbigny, 1835a: 32. Rio Parana (republica Argentina)...Lacubus provinciæ Corrientes (republica Argentina). Syntypes: BMNH 1854.12.4.327-329 (28 spms.) [labeled "*spixii*"], MNHN (2 lots, 8 spms.), MCZ (2 spms.) [labeled as paratypes].

Remarks. Junior primary homonym of *zonata* Spix, 1827; replaced by *spixii* Orbigny, 1838.

Genus FELIPPONEA Dall, 1919

FELIPPONEA Dall, 1919: 10. Type species: *Ampullaria (Felipponea) neritiniformis* Dall, 1919, by monotypy.

Considered a synonym of *Asolene* Orbigny, 1838, by Pilsbry (1933: 74), but treated here as a full genus with three included species, following Hylton Scott (1958: 317) and Berthold (1991: 23, 250).

elongata

Ampullaria (Felipponea) elongata Dall, 1921: 133. Uruguay River, Dept. of Paysandú. Holotype: USNM 333024. Distribution: Uruguay.

Remarks. Junior primary homonym of *elongata* Orbigny, 1842, which is here listed under *Pomacea* Perry, 1810.

iheringi

Asolene iheringi Pilsbry, 1933: 73, pl. 2, figs. 7 [paratype], 8 [paratype], 9 [holotype], 9a [holotype]. Rapids of Butni, Rio Uruguay, between San Borja and Uruguayana, Rio Grande do Sul, Brazil. Holotype [figured and distinguished by measurements given in the text]: ANSP 124615 ["124615a" (Baker, 1964: 168)]; paratypes: ANSP 365363 (3 spms.). Distribution: Southern Brasil.

neritiniformis

Ampullaria (Felipponea) neritiniformis Dall, 1919: 10. Rio Uruguay, Department of Paysandu. Holotype: USNM 332780; topotype: ANSP 141211 (Pilsbry, 1933: 76). Distribution: Uruguay River basin: Argentina, Brasil, Uruguay (Hylton Scott, 1958: 318; Faraco et al., 2002).

Genus MARISA Gray, 1824

MARISA Gray, 1824: 276. Type species: *Helix cornuarietis* Linnaeus, 1758, by subsequent designation of Gray (1847: 148).

CERATODES Guilding, 1828: 537, 540. Type species: *Helix cornuarietis* Linnaeus, 1758, by original designation.

Gray (1824: 276) established *Marisa* "for a genus of shells which has been confused with *Ampullaria*, but which differs from it in having a horny operculum and simple peristome". That is, he was establishing *Marisa* for American ampullariids, distinguishing them from Old World species with a calcified operculum, which are now placed in *Pila* Röding, 1798. [*Ampullaria* Lamarck, 1799, is a junior objective synonym of *Pila* Röding, 1798 (Cowie, 1997a;

ICZN, 1999a; and see below under *Pomacea* Perry, 1810]). Martens (1899: 424) took Gray's *Marisa* to have been "intended for all American *Ampullariæ*", but incorrectly considered it junior to *Ceratodes* Guilding, 1828, because of the date of establishment of *cornuarietis* Linnaeus, 1758, as the type species. Dall (1904: 52) misinterpreted *Ampullaria* as referring to American species with a horny operculum, and *Marisa* to "cover *Ampullaria* s.s." [what would now be called *Pomacea* Perry, 1810], and, incorrectly, to exclude *cornuarietis*, which he considered, again incorrectly, to have "so persistently and inaccurately been asserted to be the type of *Marisa*". Modern usage restricts *Marisa* Gray, 1824, to those species related to the type, *cornuarietis* Linnaeus, 1758, and places the majority of the remaining American species in *Pomacea* Perry, 1810 (with a small number in *Asolene* Orbigny, 1838, *Felipponea* Dall, 1919, and *Pomella* Gray, 1847).

The type species of *Marisa* Gray, 1824, has been considered as *Marisa intermedia* Gray, 1824, by monotypy (e.g., Pilsbry & Bequaert, 1927: 169; Baker, 1930: 11; Berthold, 1991: 249), whereas in fact *cornuarietis* Linnaeus, 1758, was also an originally included species, as Pilsbry (1933: 72) realized. Dall (1904: 52) misinterpreted *Marisa* Gray as not including *cornuarietis* Linnaeus, 1758. Gray (1847: 148) designated *cornuarietis* Linnaeus, 1758, as the type of *Marisa* Gray. *Ceratodes* Guilding, 1828, was established with two species included: *fasciatus* Guilding, 1828, and *cornuarietis* Linnaeus, 1758; the latter was explicitly designated as the type, contrary to the statement of Berthold (1991: 249) that the type was established by monotypy. Hence, *Ceratodes* Guilding, 1828, is a junior objective synonym of *Marisa* Gray, 1824.

Berthold (1991: 25, 159) included only two species (*cornuarietis* Linnaeus, 1758, and *planogyra* Pilsbry, 1933) in his summary of the genus, but although he illustrated (pp. 12–13) a third species, *chiquitensis* Orbigny, 1838, he apparently considered this (p. 249) to be part of the wide range of morphological variation in *cornuarietis* Linnaeus, 1758.

chiquitensis

Ampullaria Chiquitensis Orbigny, 1838d: 367, pl. 48, figs. 10, 11. sud-est de la province de Chiquitos (république de Bolivie) ... entre les Missions de San-Miguel e de San-José ... à peu près de la première Mission, dans le lac

de los Migueleños, et dans les marais des environs. Syntypes: BMNH 1854.12.4.326 (9 spms.), MNHN (1 spm.). Distribution: Bolivie (Berthold, 1991: 13).

Remarks. Described in genus *Ampullaria*, subgenus *Ampullaria* s. str., and within a section (*Ceratodes*) composed of "Espèces déprimées", but as the binomen "*Ceratodes Chiquitensis*". Thus, the original combination could be considered to be with either *Ampullaria* or *Ceratodes*. Since the species was explicitly described within the genus *Ampullaria*, we prefer *Ampullaria chiquitensis* as the original combination (cf. Petit & Harasewych, 1990: 69). Retained as a distinct species by Pilsbry (1933: 72) but here considered a synonym of *cornuarietis* Linnaeus, 1758, following Sowerby (1909a: 359) and Berthold (1991: 249).

contrarius

Planorbis contrarius Müller, 1774: 152. [No locality given]. Syntypes: the specimens figured by Seba, as cited by Müller; locations unknown, possibly Uppsala University (Dance, 1986: 225).

Remarks. Synonym of *cornuarietis* Linnaeus, 1758, *teste* Orbigny (1835a: 30), Anton (1838: 50) and Gaudion (1879: 27).

cornuarietis

Helix Cornuarietis Linnaeus, 1758: 771. O. Europæo [error; "probably Venezuela, but certainly somewhere between the Guianas and Colombia" (Pilsbry, 1933: 71)]. Type material: the specimen(s) figured by Lister, referred to by Linnaeus (1758: 771) (Pilsbry, 1933: 71); lost (Dance, 1967: 21). Distribution: northern South America, including Colombia, Venezuela, Guyana, Surinam [? error; Geijskes & Pain (1957: 47)], French Guiana, Bolivia, Brasil, Trinidad and Tobago (Pilsbry, 1933: 71–72).

Remarks. Ihering (1919: 333) appears to have incorrectly recorded this species south of the Amazon basin, from the Rio Paraguay, Rio de la Plata, and Rio Grande do Sul.

fasciatus

Ceratodes fasciatus Guilding, 1828: 540, pl. supp. 28, figs. 4–7 in fluviis Americæ æquinoctialis. Type material: not found by us in BMNH (cf. Dean, 1936: 234; Dance, 1986: 213).

Remarks. Synonym of *cornuarietis* Linnaeus, 1758, *teste* Guppy (1866: 44), and here retained as such despite being considered a subspecies (as *knorrii* Philippi, 1852) of *cornuarietis* Linnaeus, 1758, by Baker (1930: 26). Junior secondary homonym of

fasciata Roissy, 1805, when both species are placed in *Pomacea* (e.g., Baker, 1930: 26).

intermedia

Marisa intermedia Gray, 1824: 276. Brazils. Syntype: BMNH 1895.11.6.1 [although Berthold (1991: 249) stated "Typus ... verschollen ist"].

Remarks. Pilsbry (1933: 72) considered *intermedia* Gray, 1824, to be "doubtless an *Effusa*, but ... unrecognizable specifically". Berthold (1991: 249) treated *intermedia* Gray, 1824 [*Marisa*] as different from *intermedia* Férussac [*Pomacea* subgenus *Effusa*], considering the former (incorrectly) as the type of the genus *Marisa* Gray. Either a junior synonym of *cornuarietis* Linnaeus, 1758, or a senior synonym of *planogyra* Pilsbry, 1933, *teste* Berthold (1991: 249).

knorrii

Ampullaria Knorrii Philippi, 1852a: 57, pl. 18, fig. 3 [1852b: 28]. die Insel Trinidad. Type material: probably MNHNS. Distribution: Venezuela, Guyana, Surinam, Trinidad, Colombia, Panama (Baker, 1930: 26).

Remarks. Synonym of *cornuarietis* Linnaeus, 1758, *teste* Guppy (1866: 44) and Sowerby (1909a: 359), or of *fasciatus* Guilding, 1828, *teste* Philippi (1852a: 57) and Baker (1930: 26).

planogyra

Marisa planogyra Pilsbry, 1933: 70, pl. 2, figs. 2–5a. Santa Rosa, in the Descalvados region of Matto Grosso. Holotype: ANSP 158776 [158776a (Baker, 1964: 168)]; paratypes: ANSP 158780 (16 spms.), 158787 (19 spms.), 365366 (3 spms., from holotype lot), MCZ (1 spm.). Distribution: Brasil.

rotula

Ampullaria rotula Mousson, 1869: 183. unteren Magdalenstromen [= Lower Magdalena river, Colombia]. Syntypes: ZMZ 525321 (3 spms.). Distribution: Panama, Costa Rica (Pilsbry, 1933: 71), Colombia (Martens, 1899: 425).

Remarks. Mousson (1873: 19) placed it in *Ceratodes* Guilding, 1828. Synonym of *cornuarietis* Linnaeus, 1758, *teste* Sowerby (1909a: 359), and retained here as such despite being considered a distinct, closely related species or subspecies of *cornuarietis* Linnaeus, 1758, by Pilsbry (1933: 71).

Genus POMACEA Perry, 1810

POMACEA Perry, 1810c: [unnumbered plate and text] [= pl. 12 (Mathews & Iredale, 1912:

11; Clench & Turner, 1956: 120; Geijskes & Pain, 1957: 42; R. E. Petit, pers. comm. to RHC, 16 October 2000); not pl. 11, as stated by Cowie (1997a: 84)]. Type species: *Pomacea maculata* Perry, 1810, by monotypy.

CONCHYLIIUM Cuvier, 1816: 426. Type species *Nerita urceus* Müller, 1774, by subsequent designation of Pilsbry & Bequaert (1927: 170) [as *Bulimus urceus* Bruguière].
LIMNOPOMUS Dall, 1904: 52. Type species: *Ampullaria columellaris* Gould, 1848, by original designation.

The status of the genus-group names *Ampullaria* Lamarck, 1799, and *Ampullarius* Montfort, 1810, both frequently used incorrectly in combination with names of species of *Pomacea*, have been clarified by Cowie (1997a) and ICZN (1999a) as junior objective synonyms of *Pila* Röding, 1798 (see also Pain, 1956b: 79). *Pomus* "Humph." Gray, 1847, is also a junior objective synonym of *Pila* Röding, 1798. *Limnopomus* Dall, 1904, is here treated as a synonym of *Pomacea* Perry, 1810, following Berthold (1991).

The distinction between the two subgenera *Pomacea* s. str. and *Pomacea* (*Effusa*) is not clear. Only those species that have been explicitly placed in subgenus *Effusa* are listed under that heading. Others whose placement is uncertain are listed under *Pomacea* s. str., pending further research. Many of the more obscure species-group names have never before been placed in combination with the genus-group name *Pomacea*, because of the traditional but incorrect use of the genus-group name *Ampullaria* for these American species (Cowie, 1997a; ICZN, 1999a). Hence many of the species listed here are probably new combinations with *Pomacea*.

Subgenus EFFUSA Jousseume, 1889

EFFUSA Jousseume, 1889: 255. Type species: *Helix glauca* Linnaeus, 1758, by subsequent designation of Baker (1930: 11).

Baker (1930: 20) considered *luteostoma* Swainson, 1823, to be distinct from *glauca* Linnaeus, 1758, but the *luteostoma* of most other authors, including Jousseume (1889: 255), to be misidentifications of *glauca* Linnaeus, 1758. Subsequent authors have synonymized *luteostoma* Swainson, 1823, with *glauca* Linnaeus, 1758 (see below).

baeri

Ampullaria Baeri Dautzenberg, 1902: 312, pl. 9, figs. 12, 13. Rio Mixiollo [= Misciotto; Berthold, 1991: 13], province de Huallaga, Pérou. Lectotype (Fischer-Piette, 1950: 170): MNHN; paralectotypes: ANSP 99328 (1 spm.), MCZ (1 spm.), UMMZ 46767 [? error], ZMHB 59269 (1 spm.); possible paralectotypes: ZMHB 63631 (2 spms.), 109517 (1 spm.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: Peru (Berthold, 1991: 13).

Remarks. Probably synonymous with *glauca* Linnaeus, 1758, *teste* Boss & Parodiz (1977: 116), but not definitively synonymized.

balteata

Ampullaria balteata Philippi, 1851: 21, pl. 5, fig. 7 [1852b: 22]. [No locality given. Trinidad "chosen" by Baker (1930: 25).] Lectotype (Baker, 1930: 25): the specimen illustrated in "Philippi's first figure" [= pl. 5, fig. 7], probably MNHNS. Distribution: "Trinidad; also shells from Venezuela ..., Colombia ..., Tobago ..., and Martinique ... that are intermediate between this form and *neritina*" (Baker, 1930: 25); also "Venezuela - Guyane - Maroni - Orenoque" (Gaudion, 1879: 24).

Remarks. Baker (1930: 25) explicitly excluded the later figures of Philippi (1852a: 55, pl. 17, fig. 4). Although the precise origin of the designated lectotype is unknown, Baker's choice of Trinidad as the type locality follows Code Rec. 76A.1.4. Synonym of *luteostoma* Swainson, 1823 [= *glauca* Linnaeus, 1758], *teste* Paetel (1887: 477) and Alderson (1925: 6), but treated as a form of *glauca* Linnaeus, 1758, by Sowerby (1909a: 350) and Baker (1930: 25). Synonym of *glauca* Linnaeus, 1758. **N. syn.**

castanea

Ampullaria castanea Deshayes, 1830a: 31. [No locality given.] Syntype: MNHN. Distribution: "Orinocco" (Philippi, 1852a: 41); "La Guyane - Haut-Brésil = Haut-Amazone" (Gaudion, 1879: 26); "Guyana" (Paetel, 1873: 64, 1887: 477); "unknown" (Baker, 1930: 22).

Remarks. Synonym of *luteostoma* Swainson, 1823 [= *glauca* Linnaeus, 1758], *teste* Jay (1850: 36), or possibly of *neritina* Gmelin, 1791 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 22). Synonym of *glauca* Linnaeus, 1758. **N. syn.**

chlorostoma

Ampullaria chlorostoma Sowerby, 1825: 44. Unavailable name; first published as a junior

synonym of *luteostoma* Swainson, 1823, not made available before 1961 (Code Art. 11.6).

cingulata

Ampullaria cingulata Philippi, 1851: 19, pl. 5, fig. 3 [1852b: 22]. [No locality given.] Syntype: ZMHB 1376 (1 spm.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: Venezuela (Martens, 1857: 203; 1873: 202).

Remarks. Sowerby (1909a: 347) considered it a "doubtful species which may possibly be young of *A. gigas*", but it was considered a valid species and placed in subgenus *Effusa* by Baker (1930: 10). Baker (1930: 10) considered "Lago de Valencia, Ven. [= Venezuela]" as the type locality. This was probably correct because Philippi (1851: 19) described the species from material in the Berlin Museum, and Martens (1873: 202) gave this as the only known locality for material in the Berlin Museum. However, Martens (1873: 202) also indicated that some of the material was without locality data. Strictly then, the type locality probably includes the above location but may not be restricted to it.

conica

Ampullaria effusa variety *conica* Guppy, 1866: 44 [by bibliographic reference to Guppy, 1864: 244]. Trinidad. Type material: probably Victoria Inst., Trinidad [destroyed], not found by us in BMNH (cf. Dance, 1986: 213). Distribution: Trinidad.

Remarks. Junior primary homonym of *conica* Lamarck, 1804 [also 1822] (now placed in family Naticidae), *conica* Swainson, 1823 [= *virens* Lamarck, 1822 (Philippi (1852a: 73)) (now placed in *Pila* Röding, 1798), and *conica* Wood, 1828 [*Ampullaria conica* selected as the correct original combination by Cowie (1997b: 4)] (now placed in *Pila* Röding, 1798). Synonym of *neritina* Gmelin, 1791 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 22). Synonym of *glauca* Linnaeus, 1758. **N. syn.**

crocostoma

Ampullaria crocostoma Philippi, 1852a: 42, pl. 12, fig. 3 [1852b: 26]. Caraccas. Possible syntypes: ZMHB 109501 (3 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003) [the largest shell is very similar to the original figure (F. Köhler, pers. comm. to RHC, 6 March 2003)]; possibly also MNHNS. Distribution: Venezuela, Guyana (Pain 1950b: 71).

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Baker (1930: 18) and Starmühlner (1988: 253), followed here, although treated as a variety of that species by

Pain (1950b: 69). See also Boss & Parodiz (1977: 116).

cuprina

Ampullaria cuprina Reeve, 1856e: pl. 1, fig. 1. [No locality given.] Syntypes: BMNH 20020652 (2 spms.). Distribution: unknown.

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 253), followed here, although considered a variety of that species by Sowerby (1909a: 351).

dubia

Ampullaria dubia Guilding, 1828: 539, pl. supp. 27, figs. 7, 8. in fluviis Americæ æquinoctialis ... small river in the Gulph of Paria ... canals of Demerara [Baker (1930: 15–16), in designating the lectotype, restricted the type locality to the “Gulf of Paria, probably one of distributaries of Rio Orinoco”]. Lectotype (Baker, 1930: 15): the specimen in Guilding’s fig. 7, not found by us in BMNH (cf. Dean, 1936: 234; Dance, 1986: 213). Distribution: Guyana, Surinam, Rio Orinoco, St. Lucia (Lesser Antilles), Guadeloupe (Baker, 1930: 16).

Remarks. Synonym of *luteostoma* Swainson, 1823 [= *glauca* Linnaeus, 1758], *teste* Sowerby (1909a: 350). Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 254), followed here (see also Baker, 1930: 12, 15), despite Alderson (1925: 3) and Pain (1950b: 70) considering it unidentifiable.

effusa

Nerita effusa Müller, 1774: 175. [No locality given. Rio Yaracuy, Ven. [= Venezuela] chosen by Baker (1930: 17).] Syntypes: the specimens figured by Seba and Geve, as cited by Müller, and the specimens “In Museo Moltkiano” (Müller, 1774: 176; see also Baker, 1930: 17) [not in the Copenhagen Museum (O. S. Tendahl, pers. comm. to RHC, 18 April 2002)]; not the specimen illustrated by Lister, as cited by Müller, nor ANSP 50596 (Baker, 1930: 17). Distribution: French Guiana [? error], Surinam [? error] (Drouët, 1859:79), Martinique (Saulcy, 1854: 141; Paetel, 1887: 478), Venezuela (Baker, 1930: 17), Guyana (Pain, 1950b: 65).

Remarks. Baker (1930: 17) considered the locality of ANSP 50596 as the type locality, but although this action was not a valid neotype designation (Code Art. 75) and the origin of the true type material is unknown, his choice of the type locality appears to follow Code, Rec. 76A.1.4. Synonym of *glauca* Linnaeus, 1758, *teste* Swainson (1823a: pl. 157), Philippi (1852a: 43) and Starmühlner

(1988: 253), followed here (see also Baker, 1930: 12, 17), contrary to Sowerby (1909a: 350) who treated it as a variety of that species. Gmelin (1791: 3626) listed *effusa* Müller, 1774, as variety “ γ ” of *ampullacea* Linnaeus, 1758, which is now placed in *Pila* Röding, 1798. However, Philippi (1852a: 43) and Starmühlner (1988: 253), in listing Gmelin’s variety as a synonym of *glauca* Linnaeus, 1758, gave it as “*ampullaria* var. γ . Gm” and “*Helix ampullaria* var. j”, respectively; and Gaudin (1879: 29), in listing it as a synonym of *effusa* Müller, 1774, gave it as “*Helix ampullaria* var Gmel”. These usages of “*ampullaria*” are misspellings of “*ampullacea*”.

expansa

Ampullaria expansa Miller, 1879: 152, pl. 15, fig. 6. Rio Santiago prope Playa de oro, in provincia Esmeraldas. Type material: location not known to us. Distribution: Ecuador (Miller, 1879: 152; Sowerby, 1909a: 349).

Remarks. Placed in subgenus *Effusa* following Kobelt (1913a: 147), who placed it in his “Formenkreis der *Ampullaria glauca* L. (*Effusae* Martens)”. Junior primary homonym of *expansa* Nevill, 1877, which is now placed in *Pila* Röding, 1798.

geveana

Ampullaria Geveana Philippi, 1852a: 26. Unjustified emendation of *gevesensis* Deshayes, 1838.

Remarks. Philippi (1852a: 26) explicitly made the emendation. However, the original name is here considered a result of incorrect latinization, which is not treated as an inadvertent error and therefore not a justification for emendation (Code Art. 32.5.1). As an emendation, *geveana* Philippi, 1852, is available and a junior objective synonym of *gevesensis* Deshayes, 1838 (Code Art. 33.2.3.), and hence a synonym of *glauca* Linnaeus, 1758, as indicated by Starmühlner (1988: 253).

gevesensis

Ampullaria Gevesensis Deshayes, 1838: 541. [No locality given.] Syntype: MNHN. Distribution: French Guiana (Sowerby 1909a: 350), Guyana, Venezuela “in all probability ... from Venezuela in the north, southwards to the Amazon Valley” (Pain, 1950b: 71), Surinam (Pain, 1952: 31; Geijskes & Pain, 1957: 44).

Remarks. Variety of *glauca* Linnaeus, 1758, *teste* Sowerby (1909a: 350 [as “*Geveanensis*”]), Pain (1950b: 69) and

Geijskes & Pain (1957: 44). Synonym of *effusa* Müller, 1774 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 17). Synonym of *glauca* Linnaeus, 1758. **N. syn.**

glauca

Helix glauca Linnaeus, 1758: 771. [No locality given. Rio Tuca, near Tucacas, Venezuela "chosen" by Baker (1930: 12, 18).] Type material: lost (Dance, 1967: 21). Distribution (*glauca* Linnaeus, 1758, and its varieties): Brasil, Bolivia, Colombia, Venezuela, Guyana, Surinam, French Guiana, Trinidad, Grenada, Barbados, Guadeloupe, Dominica, Martinique, St. Lucia (Vernhout, 1914a: 43; Pain, 1950b: 69; Geijskes & Pain, 1957: 44; McKillop & Harrison, 1980: 271; Tillier, 1980: 24; Starmühlner, 1984: 89–91, 1988: 254).

Remarks. The designation by Baker (1930: 19) of Knorr's figure as a neotype ["type"] was invalid (*Code Art.* 75). However, although the origin of the type material is unknown, Baker's choice of the type locality appears to follow *Code*, Rec. 76A.1.4. Baker (1930: 12–13) recognized nine "forms" of *glauca* Linnaeus, 1758, considering that "at least the first six of these are not geographic subspecies". Some of these "forms" are here treated as synonyms, others as undetermined infraspecific taxa. Because *glauca* Linnaeus, 1758, is highly variable (e.g., Arias, 1952: 64) revisionary study would probably synonymize all nine "forms".

guadelupensis

Ampullaria guadelupensis Martens, 1857: 199. Caripe auf Guadeloupe. Syntypes: ZMHB 1385 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); no type material found by us in BMNH or MCZ (cf. Dance, 1986: 218). Distribution: Guadeloupe.

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Baker (1930: 18) and Starmühlner (1988: 253).

intermedia

Ampullaria intermedia Férussac, in Quoy & Gaimard, 1825d: 489, pl. 68, figs. 1–3. Brésil. Syntypes: MNHN (2 spms.). Distribution: Brasil (Berthold, 1991: 12).

Remarks. Synonym of *sordida* Swainson, 1823, *teste* Orbigny (1835a: 31), Philippi, (1852a: 38), Sowerby (1909a: 357) and Thiengo (1989: 351), followed here, although contrary to Berthold (1991: 23), who treated it as a valid species in subgenus *Effusa*.

luteostoma

Ampullaria luteostoma Swainson, 1823a: pl. 157, top and bottom figs. [No locality given.] Type material: possibly MMUE (Dean, 1936:

232; H. McGhie, pers. comm. to RHC, 29 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: Venezuela, Guyana, French Guiana, Martinique, Guadeloupe (Pain, 1950b: 71).

Remarks. Variety of *glauca* Linnaeus, 1758, *teste* Pain (1950b: 69, 71). Synonym of *glauca* Linnaeus, 1758, *teste* Boss & Parodiz (1977: 116), followed here.

+ **minuscula**

Pomacea (Effusa) glauca form *minuscula* Baker, 1930: 24, pl. 30, fig. 8. Quebrada Sucremo, a small, swampy brook in heavy forest near Boquerón, Venezuela (station number "H, VIII, b, 29"). Holotype: UMMZ 92069; paratypes: ANSP 147706 (2 spms.), MCZ (1 lot, 3 spms.). Distribution: Venezuela.

Remarks. Retained as a distinct infraspecific taxon, following Baker (1930: 12, 24) and pending further research.

neritina

Helix neritina Gmelin, 1791: 3638. [No locality given. Belmont, near Port of Spain, Trinidad "chosen" by Baker (1930: 22).] Holotype: the specimen illustrated in "Kaemerer Conch. Rudolst. p. 185. n. 2. t. 11. f. 7." (cited by Gmelin), location not known to us. Distribution: ? Colombia, Venezuela, Trinidad, Tobago, St. Lucia, Martinique, Guadeloupe (Baker, 1930: 22).

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Philippi (1852a: 43), Paetel (1887: 480) and Starmühlner (1988: 253) (see also Baker, 1930: 12, 22). Although the locality of the holotype is unknown, Baker's choice of the type locality appears to follow *Code*, Rec. 76A.1.4.

oculuscommunis

Helix oculus communis Gmelin, 1791: 3621. [No locality given. Rio Yaracuy, Venezuela, "chosen" by Baker (1930: 14).] Lectotype (Baker 1930: 14): the specimen illustrated by "Seba (Thes., pl. 40, figs. 3–5)"; paralectotypes: the specimens illustrated in the other figures cited by Gmelin (1791: 3621). Distribution: Venezuela, Guyana, French Guiana (Baker, 1930: 14).

Remarks. Baker (1930: 14) designated the lectotype; and, although the locality of this specimen is unknown, his choice of a type locality appears to follow *Code* Rec. 76A.1.4. Synonym of *glauca* Linnaeus, 1758, *teste* Philippi (1852a: 43), Sowerby (1909a: 350) and Starmühlner (1988: 253) (see also Baker, 1930: 12, 14). Synonym of *gevesensis*

Deshayes, 1838 [= *glauca* Linnaeus, 1758],
teste Pain (1950b: 69).

oligista

Pomacea (Effusa) oligista Pilsbry & Olsson, 1953: 98, pl. 6, fig. 6. on the road ... from Cartagena to Barranquilla ... a freshwater lake known as the Ciénaga de Luruaco. Holotype: ANSP 189546 ["189546a" (Baker, 1964: 168)]; paratypes: ANSP 189547 (10 spms.), 365367 (3 spms., figured). Distribution: Colombia.

Remarks. Pilsbry & Olsson (1953: 98) gave measurements of the "type" and the largest "paratype" but gave no catalog numbers. Synonym of *planorbula* Philippi, 1852, *teste* Pain (1956a: 76–77).

orinoccensis

Ampullaria orinoccensis Troschel, 1848: 548. am obern Pomeron. Syntypes: ZMHB 1384a (1 spm.), 1384b (3 spms.), 1384c (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); possible syntypes: MCZ [labeled as paratypes, but as "*oronocensis* Reeve"]; type material possibly also in the Dohrn collection, Stettin Museum [destroyed; Dance, 1986: 210: 229]; no type material found by us in BMNH (cf. Dance, 1986: 210). Distribution: Guyana, Surinam, Venezuela (Vernhout, 1914a: 43; Pain, 1952: 30–31; Geijskes & Pain, 1957: 45), French Guiana (Tillier, 1980: 27).

Remarks. Name attributed to Ziegler by Troschel (1848: 548). Various misspelled, e.g., as "*Oronocensis*" by Reeve (1856b: pl. 10, fig. 45) and "*Orinocensis*" by Martens (1873: 204). Synonym of *dubia* Guilding, 1828 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 15). Variety or subspecies of *glauca* Linnaeus, 1758, *teste* Pain (1950b: 70; 1952: 31), Geijskes & Pain (1957: 44) and Tillier (1980: 26). Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 253 [as "*oronocensis* Reeve"]), followed here.

pachystoma

Ampullaria pachystoma Philippi, 1849: 17. Brasilia [? error]. Type material: probably MNHNS. Distribution: Brasil [? error].

Remarks. Synonym of *luteostoma* Swainson, 1823 [= *glauca* Linnaeus, 1758], *teste* Paetel (1887: 480) and Alderson (1925: 6). Variety of *glauca* Linnaeus, 1758, *teste* Sowerby (1909a: 350). Retained as a distinct species by Baker (1930: 16–17). Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 253), followed here.

pattersoni

Pomacea (Effusa) pattersoni Boss & Parodiz, 1977: 112, figs. 7–9. Vicinity of

Yarina (6°17'2" S; 75°17'2" W), upstream from Isla Navarro, close to Río Huallaga, Department of San Martín, Peru. Holotype: MCZ 272900; paratype: MCZ 272918. Distribution: Peru.

philippiana

Pomacea (Effusa) glauca form *philippiana* Baker, 1930: 14. canal near Georgetown, British Guiana. Holotype ANSP 70016 ["170016a" (Baker, 1964: 168)]; paratypes: ANSP 365368 (14 spms.). Distribution: Surinam to Orinoco and Guadeloupe (Baker, 1930: 14).

Remarks. Synonym of *glauca* Linnaeus, 1758 (see Baker, 1930: 12, 14). **N. syn.**

+ *planorbula*

Ampullaria planorbula Philippi, 1852a: 26, pl. 7, fig. 3 [1852b: 23]. [No locality given.] Syntype: ZMHB 2131 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: "Payta" (Paetel, 1888: 481), "Para." (Sowerby, 1909a: 359).

Remarks. Retained as a distinct infraspecific taxon, following Baker (1930: 12, 24) and pending further research. Pilsbry (1933: 72) considered it "to be the young stage of some variety of *P. (Effusa) glauca* (L.)".

prunulum

Ampullaria prunulum Reeve, 1856c: pl. 18, fig. 82. New Granada [in 1856 = present-day Colombia and Panama]. Syntypes: BMNH 20020679 (3 spms.). Distribution: Colombia and/or Panama.

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 253), followed here, although considered a variety of that species by Pain (1950b: 69).

quinindensis

Ampullaria quinindensis Miller, 1879: 151, pl. 15, fig. 5. Río Quinindé qui influit in fluminem Esmeraldas. Type material: location not known to us. Distribution: Ecuador (Miller, 1879: 152; Sowerby, 1909a: 357 [as "*quinquidensis*"]).

rhodostoma

Ampullaria rhodostoma Appun, 1871: 141, 548. Unavailable name; *nom. nud.*

Remarks. Treated as a synonym of *luteostoma* Swainson, 1823, by Alderson (1925: 6).

suprafasciata

Ampullaria geveana var. *suprafasciata* Kobelt, 1913b: 157, pl. 57, figs. 7, 8. [No locality given.] Type material: possibly SMFD, ZMHB (Dance, 1986: 215), but not found in ZMHB (M. Glaubrecht, pers. comm. to RHC, 1 March 2003).

Remarks. Synonym of *glauca* Linnaeus, 1758, *teste* Baker (1930: 18).

tamsiana

Ampullaria tamsiana Philippi, 1852a: 51, pl. 16, figs. 1, 2 [1852b: 27]. Puerto Cabello. Syntype: ZMHB 109502 (1 spm.) [= pl. 16, fig. 2], 109503 (2 spms.); possible syntypes 109503 (2 spms.) [one of these ? = pl. 16, fig. 1] (M. Glaubrecht, pers. comm. to RHC, 1 March 2003; F. Köhler, pers. comm. to RHC, 6 March 2003), possibly also MNHNS. Distribution: Venezuela (Berthold, 1991).

Remarks. Name attributed to Dunker by Philippi (1852a: 51; 1852b: 27). Synonym of *glauca* Linnaeus, 1758, *teste* Baker (1930: 18, 20).

teres

Ampullaria teres Philippi, 1849: 19. [No locality given.] Syntype: ZMHB 109504 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); type material possibly also in MNHNS. Distribution: Cuba [? error] (Gaudion, 1879: 40; Paetel, 1888: 482), "La Plat." [? error] (Paetel, 1873: 65).

Remarks. "Form" of *glauca* Linnaeus, 1758, *teste* Pilsbry (1927a: 251). Synonym of *neritina* Gmelin, 1791 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 22) (see also Baker, 1930: 12). Synonym of *glauca* Linnaeus, 1758. **N. syn.**

tristis

Ampullaria effusa variety *tristis* Guppy, 1866: 44. Trinidad [in title of publication]. Type material: probably Victoria Inst., Trinidad [destroyed], not found by us in BMNH (cf. Dance, 1986: 213). Distribution: Trinidad.

Remarks. Synonym of *neritina* Gmelin, 1791 [= *glauca* Linnaeus, 1758], *teste* Baker (1930: 22) (see also Baker, 1930: 12). Synonym of *glauca* Linnaeus **N. syn.**

villata

A. villata Sowerby, 1909a: 350. Unavailable name; first published as a junior synonym of *gevesensis* Deshayes, 1838 [as "*geveanensis*"], not made available before 1961 (Code Art. 11.6).

Remarks. Name attributed to Martens by Sowerby (1909a: 350) and listed as a synonym of *gevesensis* Deshayes, 1838 [= *glauca* Linnaeus, 1758]. Not listed under Martens' authorship by Ruhoff (1980: 564), the *Zoological Record* or Kabat & Boss (1997: 365).

Subgenus POMACEA Perry, 1810

Details as for genus *Pomacea* Perry, 1810.

acuta

Ampullaria acuta Paetel, 1873: 64 [1887: 476]. Unavailable name; *nom. nud.*

Remarks. Name attributed to Menke by Paetel (1873: 64, 1887: 476), and by Gaudion (1879: 23), with locality "Vera Cruz". Not listed by Sowerby (1916: 70), Sherborn (1922–1933) or Ruhoff (1980: 123).

aldersoni

Pila (Pomacea) aldersoni Pain, 1946a: 180; pl. 6, figs. 1, 2. Ecuador, in a marsh near Santa Barbara, about 170 miles S.E. of Quito. Holotype and paratype (distinguished as such in the text and the only two specimens on which the description was based): BMNH 1946.6.24.25 (1 spm.), possibly NMW.Z.1981.118.00091 (1 spm.) or NMW.1955.158.02411 (Melvill-Tomlin collection, 1 spm.). Distribution: Ecuador.

Remarks. The original label of NMW.1955.158.02411 states that it was collected in November 1939, whereas the type series was collected in January 1939; however, it does say "co-type". NMW.Z.1981.118.00091 is small compared to the type dimensions and is not the specimen figured (H. Wood, pers. comm. to RHC, 30 October 2001).

amazonica

Ampullaria Amazonica Reeve, 1856b: pl. 12, fig. 55. River Amazon. Syntype: BMNH 20020645. Distribution: Amazon (Sowerby, 1909a: 346).

angulata

Ampullaria angulata Jay, 1836: [85 (explanation of pl. 3)], pl. 3, fig. 7. Mexico [error]. Syntype: AMNH 56108 (Boyko & Cordeiro, 2001: 16) [labeled as "figd pl. 3, fig. 7" in Jay's handwriting (P. M. Mikkelsen, pers. comm. to RHC, 7 May 2002)].

Remarks. Synonym of *scalaris* Orbigny, 1835, *teste* Jay (1839: [116]), Martens (1857: 202), Gaudion (1879: 23) and Ihering (1898: 48), which has never been found as far north as Mexico. We therefore consider Jay's locality to be incorrect.

angulata

Ampullaria angulata Dunker, 1845: 188. *reipublicae* Argentinae. Type material: not in ZMHB (F. Köhler, pers. comm. to RHC, 6 March 2003), not found by us in BMNH (cf. Dance, 1986: 210).

Remarks. Junior primary homonym of *angulata* Jay, 1836.

angulata

Ampullaria angulata Deshayes, 1850: 45, pl. 72, fig. 23. [No locality given.] Type material: possibly École des Mines, not found by us in

BMNH or MNHN (cf. Dance, 1986: 210). Distribution: unknown.

Remarks. Junior primary homonym of *angulata* Jay, 1836, and *angulata* Dunker, 1845. Probably a synonym of *scalaris* Orbigny, 1835, and hence retained here as a South American species.

angulata

Pomus angulata H. Adams & A. Adams, 1854c: 347. Unavailable name; *nom. nud.*

Remarks. Name attributed to Jonas by H. Adams & A. Adams (1854c: 347). Not listed by Sowerby (1916: 70), Sherborn (1922–1933) or Trew (1992: 16). Perhaps the attribution to Jonas was in error, or Jonas' concept of the species was a misidentification of one of the three taxa listed above.

arata

Ampullaria malleata var. *Arata* Fischer & Crosse, 1890: 235 [1888: pl. 44, fig. 6d, 6e; plate published without name]. in Laguna de los Cocos, provinciae Vera Cruz ..., in paludibus prope Palizada et San Germino, provinciae Yucatan ..., in paludibus fluminis Usumasinta, prope Balancan, provinciae Tabasco. Type material: Sallé collection, not found by us in BMNH, MNHN, etc. (cf. Dance, 1986: 209, 225). Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Baker (1922: 37) and Pain (1964: 227).

+ *archimedes*

Ampullaria Archimedes Spix, in Wagner, 1827: 1, pl. 2, fig. 2. [No locality given.] Type material: probably lost (Philippi, 1851: 10; Fechter, 1983: 221; S. C. Thiengo, unpublished). Distribution: unknown.

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Spix illustrated *archimedes* as a full species, but Wagner, in writing the descriptions, treated *archimedes* "Spix" as a variety of *zonata* "Wagner". We retain it as an infraspecific taxon of *zonata* Spix, 1827, following Philippi (1851: 10) and Sowerby (1909a: 359), though they were synonymized by Martens (1857: 202).

armeniacum

Ampullaria armeniacum Hupé, 1857: 69, pl. 13, fig. 5. le fleuve des Amazones. Distribution: "Haut-Amazone" (Gaudion, 1879: 24). Type material: not found by us in MNHN (cf. Dance, 1986: 214).

aulanieri

Ampullaria Aulanieri Deville & Huppé, 1850: 642, pl. 15, fig. 4. lac de Cruz Playa, sur la

rivière de l'Ucayali (Pérou). Syntypes: MNHN (3 lots, 15 spms.). Distribution: Peru (Pain, 1960: 424).

auriformis

Ampullaria auriformis Reeve, 1856e: pl. 28, fig. 133a, b. Honduras. Syntype: BMNH 20020646. Distribution: Honduras.

Remarks. May be a variety of *hopetonensis* Lea, 1834, *teste* Sowerby (1909a: 346), but note the skepticism of Pain (1964: 225) regarding this.

aurostoma

Ampullaria aurostoma Lea, 1856: 110. Carthagera. Syntypes: USNM 106299 [figured by Lea (1866, pl. 22, fig. 4), labeled in the USNM as the holotype], USNM 106273 (11 spms.) [labeled as paratypes], MCZ (1 lot) [labeled as paratypes]. Distribution: Mexico [? error] (Paetel, 1887: 477), Colombia, Venezuela (Baker, 1930: 9; Pain, 1956a: 78).

Remarks. Also published by Reeve (1856e: pl. 28, fig. 131a, b), who said "Lea MS". Retained as a distinct species following Baker (1930: 8) and Pain (1956a: 78), contrary to Sowerby (1909a: 347) and Kobelt (1913a: 145) who synonymized it with *cerasum* Hanley, 1854. Placed in subgenus *Limnopomus* Dall by Baker (1930: 8).

australis

Ampullaria australis Orbigny, 1835a: 32. lacubus Pampas meridionalibus Buenos-Ayres (republica Argentina). Syntype: BMNH 1854.12.4.335. Distribution: Argentina.

Remarks. Synonym of *insularum* Orbigny, 1835, *teste* Sowerby (1909a: 353), or a variety of *hopetonensis* Lea, 1834 [= *paludosa* Say, 1829], *teste* Sowerby (1909a: 352; but see Pain, 1964: 225). Synonym of *canaliculata* Lamarck, 1822, *teste* Hylton Scott (1958: 299) and Cazzaniga (2002: 73).

autumnalis

Ampullaria autumnalis Reeve, 1856a: pl. 4, fig. 16. [No locality given.] Syntype: BMNH 20020647. Distribution: unknown.

Remarks. Synonym of *sordida* Swainson, 1823, *teste* Sowerby (1909a: 357) and Kobelt (1913h: 206).

avellana

Ampullaria avellana Sowerby, 1909a: 346 [name], 360 [description], text fig. Lagunella, Venezuela. Syntypes: BMNH 1909.10.19.34 (1 spm.) (see also Sowerby, 1909a: 359), HUU 21519 (1 spm.) (H. Mienis, pers. comm. to RHC, 4 August 2002), MHNG 1093/99 (2 spms.) (Y. Finet, pers. comm. to RHC, 22 August 2002). Distribution: Venezuela.

Remarks. Junior primary homonym of *avellana* Lamarck, 1822 [not Ampullariidae (Sowerby, 1825: 44; Jay, 1850: 294)].

batabana

Ampullaria batabana Paetel, 1887: 477. Unavailable name; *nom. nud.*

Remarks. Listed as from Cuba by Paetel (1887: 477).

belizensis

Ampullaria Belizensis Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 45, fig. 2, 2a–c [Crosse & Fischer, 1890: 110; see also Fischer & Crosse (1890: 231, pl. 48, fig. 9, 9a)]. [No locality given. in coloniã anglicã Belize (Crosse & Fischer (1890: 110).] Syntypes: MNHN (5 lots, 36 spms.) (see also Sowerby, 1909b: 363). Distribution: Belize.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

brasiliensis

Ampullaria Brasiliensis Paetel, 1887: 477. Unavailable name; *nom. nud.*

bridgesii

Ampullaria Bridgesii Reeve, 1856b: pl. 11, figs. 50, 51. Rio Grande, Bolivia. Lectotype (Pain, 1960: 425): BMNH 20010487 (shell figured as no. 50 by Reeve); paralectotype: BMNH 20010488. Distribution: Brasil (Baker, 1914: 660), Bolivia.

Remarks. Pain (1960: 425) considered the nominotypical subspecies of *bridgesii* Reeve, 1856, to be a rare and local form, with the subspecies *diffusa* Blume, 1957, being much more widespread. Sometimes synonymized with *scalaris* Orbigny, 1835 (e.g., Ihering, 1898: 48), but almost certainly incorrectly.

bullae

Ampullaria bulla Reeve, 1856d: pl. 22, fig. 104a, b. [No locality given but type material labeled as from Mexico.] Syntypes: BMNH 20020648 (2 spms.). Distribution: Ecuador [? error] (Paetel, 1887: 477), Mexico (Sowerby, 1909a: 346).

buxea

Ampullaria buxea Reeve, 1856e: pl. 23, fig. 112. [No locality given.] Syntype: BMNH 1907.10.28.210. Distribution: Colombia (Paetel, 1887: 477), Jamaica (Sowerby, 1909a: 346).

Remarks. Synonym of *fasciata* Roissy, 1805, *teste* Pilsbry (1927a: 247), although considered a possible synonym of *hopetonensis* Lea, 1834, by Martens (1857: 203).

caliginosa

Ampullaria caliginosa Reeve, 1856e: pl. 25, fig. 118. [No locality given.] Type material: not found by us in BMNH. Distribution: Florida (Walker, 1918: 124).

Remarks. Synonym of *paludosa* Say, 1829, *teste* Sowerby (1916: 70), followed here, though Pilsbry (1927a: 250) was not certain of this synonymy.

camena

Pomacea camena Pain, 1949a: 258; pl. 13, figs. 5, 6. shallow stream near Lagunella, Venezuela, at 800 metres. Holotype: BMNH 1946.10.2.4 (Pain, 1949a: 258; incorrectly citing BMNH 1946.10.2.3, which is the number of the holotype of *vickeryi* Pain, 1949, in both his paper and the BMNH register); paratypes (1 only mentioned by Pain (1949a: 258)): HUU 21516 (1 spm.) (H. Mienis, pers. comm. to RHC, 4 August 2002), NMW.Z.1981.118.00108 (Pain collection, 2 spms.), NMW.1955.158.02412 (Melvill-Tomlin collection, 1 spm.), MCZ. Distribution: Venezuela.

Remarks. The holotype in the BMNH is not a close match to the specimen illustrated by Pain (1949a: figs. 5, 6), although the other two holotypes illustrated in Pain's paper are of the BMNH specimens (P. B. Mordan, pers. comm. to RHC, 2 November 2001, 7 February 2003).

canaliculata

Ampullaria canaliculata Lamarck, 1822a: 178. les rivières de la Guadeloupe [? error; perhaps Lago Guadeloupe, Argentina, not the Caribbean island of Guadeloupe (Pain, 1946b: 58; Hylton Scott, 1958: 300; Thiengo et al., 1993: 68; Cazzaniga, 2002: 74)]. Possible holotype: MHNG 1093/91 (Sowerby, 1909b: 363; Mermod, 1952: 88; Y. Finet, pers. comm. to RHC, 24 October 1994, 22 August 2002). Distribution: Argentina, Bolivia, Brazil, Paraguay, Uruguay (Hylton Scott, 1958: 301–303) [but ascertaining the true distribution of this variable species depends on detailed taxonomic study; e.g., Cazzaniga (1987)].

Remarks. Lamarck (1804: 32) also described a marine fossil from the Eocene of France as *Ampullaria canaliculata*, this species being the type species of *Amauropsina* Chelot, 1885, which is either in the Naticidae (Kabat, 1991: 426) or Ampullospiridae (Tracey et al., 1996: 116). An application (Cowie et al., 2001) was submitted to the ICZN to retain both names as valid (*Code Art.*

23.9.5), and this was so ruled by the ICZN (2002: 137).

cassidiformis

Ampullaria Cassidiformis Reeve, 1856b: pl. 12, fig. 56. Lake of Maracaibo, Venezuela. Syntype: BMNH 20020649. Distribution: Venezuela.

Remarks. The original spelling, as given above, is considered incorrect, as it was clearly an inadvertent error [Code Art. 32.5.1] inasmuch as other species published by Reeve at the same time with similarly formed names did not lack the "s". The index to Reeve's work has "*cassidiformis*", but this was published later and therefore is to be considered as evidence external to the original publication. Synonym of *eximia* Dunker, 1853, *teste* Baker (1930: 6).

castelloi

Ampullaria Castelloi Sowerby, 1894: 48, pl. 4, fig. 22. River Meta, S.E. of Bogota. Lectotype (Pain, 1949b: pl. 1, figs. 1, 2): BMNH 1893.5.29.3 [possibly part of the type series but not the specimen originally figured by Sowerby; P. B. Mordan, pers. comm. to RHC, 7 February 2003]; possible paralectotypes: MCZ (1 lot) [labeled "? paratypes"]. Distribution: Colombia, Surinam (Vernhout, 1914a: 29, 41, 43) [? error; Geijskes & Pain, 1957: 45].

Remarks. Placed in *Limnopomus* Dall by Pain (1949b: 39). Sowerby (1894: 48) based his description on more than one shell ("... in some specimens [the umbilicus is] completely closed"). Therefore, the specimen figured by Pain (1949b: pl. 1, figs. 1, 2) as the "type" must be considered a lectotype (Code Art. 74.5, Rec. 73F).

castelnaudii

Ampullaria castelnaudii Hupé, 1857: 65, pl. 11, fig. 1. le fleuve des Amazones. Syntypes: MNHN (4 lots, 7 spms.). Distribution: "Haut-Amazone" (Gaudion, 1879: 26).

catamarcensis

Ampullaria catamarcensis Sowerby, 1875: 600, pl. 72, fig. 4. Catamarca (on the Andes of Peru) [? = Cajamarca (Peru); Cazzaniga (1987: 59–61)]. Syntypes: BMNH 1875.4.19.2 (2 spms.). Distribution: Peru.

Remarks. Placed in subgenus *Limnopomus* Dall by Cazzaniga (1987: 59–61).

+ *catemacensis*

Ampullaria patula catemacensis Baker, 1922: 39, pl. 14, figs. 2–4, pl. 15, fig. 7. Lake Catemaco. Holotype (Baker, 1922: pl. 14, fig.

2); UMMZ 31850; paratypes: UMMZ 31850 (5 spms., not separated from the holotype), ANSP 133680 (4 spms.); topotypes: MCZ. Distribution: Lake Catemaco, Mexico (Naranjo-García & García-Cubas, 1986: 603).

cerasum

Ampullaria cerasum Hanley, 1854: [unnumbered page], *Ampullaria* pl. 2, fig. 7. [No locality given.] Syntype: BMNH 1907.11.21.83. Distribution: Mexico (Martens, 1899: 421; Sowerby, 1909a: 347).

Remarks. Not listed among Hanley's taxa by Norris & Dance (2002: 370).

+ *chamana*

Ampullaria lattrei chamana Hinkley, 1920: 53 [1921: pl. 4, fig. 5]. Guatemala [in publication title]. Lectotype (Baker, 1964: 168): ANSP "46231" [error; correctly 46321]; paralectotypes: Bryant Walker collection, Museum of the Illinois University, Hinkley collection (Hinkley, 1920: 54), ANSP 76238 (2 spms.; originally 3 spms. in this lot), MCZ. Distribution: Guatemala.

chaquensis

Pomacea canaliculata chaquensis Hylton Scott, 1948: 242. Madrejón de Ingeniero Juárez, Chaco salteño. Formosa. Syntypes ["Cotipos"]: IMLA. Distribution: Argentina, Bolivia (Hylton Scott, 1958: 304).

Remarks. Synonym of *canaliculata* Lamarck, 1822, *teste* Cazzaniga (1987: 56).

chemnitzii

Ampullaria Chemnitzii Philippi, 1852a: 39, pl. 10, fig. 5 [1852b: 25]. [No locality given. 4.5 kilometers south ... from Tucacas "chosen" by Baker (1930: 5)] Lectotype: the specimen illustrated in "Philippi's figure" (Baker, 1930: 5) Type material: probably MNHNS. Distribution: Ecuador, Colombia, Venezuela (Pain, 1956a: 75).

Remarks. Although the origin of the designated lectotype is unknown, Baker's (1930: 5) type locality choice (the locality being that of his own material) appears to follow Code Rec. 76A.1.4. Synonym of *lineata* Spix, 1827, *teste* Sowerby (1909a: 354) and Vernhout (1914a: 27), but retained here as a distinct species, following Baker (1930: 5).

chiapasensis

Ampullaria malleata var. *Chiapasensis* Fischer & Crosse, 1890: 235, pl. 48, fig. 5. in paludibus prope Las Playas, in provincia Chiapas. Type material: Morelet collection, not found by us in BMNH or MNHN, not found in MHNG by Y. Finet (pers. comm. to RHC, 5

August 2002) (cf. Dance, 1986: 219). Distribution: Mexico.

Remarks. Synonym of *livescens* Reeve, 1856, *teste* Pain (1964: 228).

cincta

Ampullaria cincta Cristofori & Jan, 1832: [Section IIa, Pars Ia] 7, [Mantissa] 3. Jamaica. Type material: formerly MCSN [destroyed; A. Garassino, pers. comm. to RHC, 5 September 2002]. Distribution: Jamaica.

Remarks. Synonym of *fasciata* Roissy, 1805, *teste* Pilsbry (1927a: 247).

citreum

Ampullaria citreum Reeve, 1856e: pl. 24, fig. 116a, b. [No locality given.] Syntype: BMNH 1907.11.21.83. Distribution: "Western Hemisphere" (Sowerby, 1909a: 347).

columbensis

Ampullaria Columbensis Jay, 1836: 47 [1839: 65; 1850: 282]. Unavailable name; *nom. nud.*

Remarks. South America given as locality by Jay (1836: 47).

columbiensis

Ampullaria columbiensis Philippi, 1851: 20, pl. 5, fig. 5. [No locality given; "West-kolumbien" on label in ZMHB] Syntypes: ZMHB 1343 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003), possibly also MNHNS. Distribution: possibly "Rio Pastása in Andibus orientibus" (Miller, 1879: 150), Colombia.

Remarks. Name attributed to Sowerby by Philippi (1851: 20). Miller (1879: 150) discussed his material under "*Ampullaria* aff. *Columbiensis* Phil.". Alderson (1925: 53) considered it "unrecognized" but discussed it under *interrupta* Sowerby, 1909, which was placed in *Limnopomus* Dall, 1904, by Sowerby (1909a: 361). We therefore include it tentatively in *Pomacea* Perry, 1810.

columbiensis

Ampullaria columbiensis Reeve, 1856b: pl. 5, fig. 25. Chiriqui, Veragua [Colombia]. Syntypes: BMNH 20020650 (2 spms.), MNHN (3 spms.).

Remarks. Name attributed to Sowerby, MS. Junior primary homonym of *columbiensis* Philippi, 1851; replaced by *martensiana* Nevill, 1884. Also replaced by *tristrami* Fischer & Crosse, 1890, Fischer & Crosse (1890: 245) apparently being unaware of Nevill, 1884. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

columellaris

Ampullaria columellaris Gould, 1848: 74. Province of Maynas, Peru. Lectotype

(Johnson, 1964: 57): USNM 5547. Distribution: Peru, Bolivia, ? Ecuador (Pain, 1960: 429).

Remarks. Unless it can be determined that Gould based his description on only a single specimen, Johnson's (1964: 57) listing of the "holotype" in fact designated a lectotype (Code Art. 74.6, Rec. 73F). The type species of *Limnopomus* Dall, 1904, which is here considered a synonym of *Pomacea* Perry, 1810.

commissionis

Amp. decussata var. *commissionis* Ihering, 1898: 51. Iguape. Syntypes: ZMHB 109513 (1 spm.), 109514 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); no type material in MZUSP (cf. Dance, 1986: 214). Distribution: Brasil (Pilsbry, 1933: 74).

Remarks. Raised to full species level and placed in *Asolene* Orbigny, 1838, by Kobelt (1913h: 202), but removed from *Asolene* Orbigny, 1838, by Ihering (1919: 341).

conoidea

Ampullaria conoidea Martens, 1899: 423, pl. 24, figs. 10, 11. Costa Rica. Possible syntypes (description based explicitly on 2 spms. only): ZMHB 21857 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 4 May 2002, 1 March 2003). Distribution: Costa Rica.

consolatrix

Ampullaria consolatrix Ihering, 1919: 338. Fl. Uruguay, prope Itaquy, Río Grande do Sul. Type material: not found by us in MZUSP (cf. Dance, 1986: 214). Distribution: Brasil.

contamanoensis

Ampullaria contamanoënsis Preston, 1914: 527. Contamano, Río Ucayali, Eastern Peru. Syntypes: BMNH 1915.1.6.84, NMW.Z.1981.118.00096 (Pain collection, 1 spm.), not in HUI, not found by us in UMMZ (cf. Dance, 1986: 206, 222). Distribution: Peru.

Remarks. Synonym of *aulanieri* Deville & Huppé, 1850, *teste* Pain (1960: 424).

cornucopia

Ampullaria cornucopia Reeve, 1856e: pl. 1, fig. 4. Columbia [= Colombia]. Syntype: BMNH 20020651. Distribution: Colombia (Sowerby, 1909a: 347).

costaricana

Ampullaria costaricana Martens, 1899: 418, pl. 24, figs. 14–17. Nicaragua: Lake of Nicaragua ... N.W. Costa Rica: Río Saveyre, at Boca Culebra ... S.W. Costa Rica: Palmar, south of the Río Grande de Terraba ... N.

Panama: Chiriqui. Syntypes: ZMHB 109507 (1 spm.) [= fig. 16], 109508 (1 spm.) [= fig. 15], 109509 (1 spm.) [= fig. 17], 109510 (1 spm.) [= fig. 14], 109511 (7 spms.), 109512 (1 spm.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003; F. Köhler, pers. comm. to RHC, 6 March 2003); no type material found by us in BMNH or MCZ (cf. Dance, 1986: 218). Distribution: Nicaragua, Costa Rica, Panama.

Remarks. Additional localities in Costa Rica given by Martens (1901: 644).

cousini

Ampullaria Cousini Jousseaume, 1877: 185, pl. 3, fig. 3. la République de l'Équateur. Syntypes: MNHN (2 lots, 3 spms.). Distribution: Ecuador (Sowerby, 1909a: 347).

crosseana

Ampullaria Crosseana Hidalgo, 1871: 206 [1872: 142, pl. 7, fig. 1]. in fluvio Amazonum dicto, Americæ meridionalis. Syntypes: MNCN 15.05/11485 (1 spm., figured), 15.05/1047 (1 spm.) (Villena et al., 1997: 75). Distribution: River Amazon (Sowerby, 1909a: 348).

Remarks. Synonym of *maculata* Perry, 1810, *teste* Pain (1960: 423).

cubensis

Ampullaria cubensis Morelet, 1849: 24. prov. borealis insulæ Cuba. Syntypes: BMNH 1893.2.4.1675-6 (2 spms.). Distribution: Cuba [? error; Pilsbry, 1927a: 252].

Remarks. Synonym of *teres* Philippi, 1849, *teste* Paetel (1887: 478), and according to the syntype labels. However, Pilsbry (1927a: 252) conclusively demonstrated that it is not *teres* Philippi, 1849 (nor *cubensis* Reeve, 1856), but he was unable to locate the type material (see also *cubensis* Reeve, 1856) and hence considered the species too poorly known to place it in the synonymy of any known species.

cubensis

Ampullaria Cubensis Reeve, 1856c: pl. 18, fig. 83a, b. Cuba. Type material: not found by us in BMNH. Distribution: Cuba.

Remarks. Junior primary homonym of *cubensis* Morelet, 1849, replaced by *poeyana* Pilsbry, 1927. Treated as a variety of *glauca* Linnaeus, 1758, by Sowerby (1909a: 350) and placed in the "Formenkreis" of *glauca* Linnaeus, 1758, by Kobelt (1913a: 150). Synonym of *glauca* Linnaeus, 1758, *teste* Starmühlner (1988: 253 [as "*culemsis*"]). Pilsbry (1927a: 251–252), followed here, retained *poeyana* Pilsbry, 1927, as a distinct

species not in the "same section of the genus [as *glauca* Linnaeus, 1758]" (i.e., subg. *Effusa*). It is possible that the syntypes listed under *cubensis* Morelet, 1849, although labeled "Morelet", are syntypes of *cubensis* Reeve, as we found no type material labeled "*cubensis* Reeve" in the BMNH. If Pilsbry had thought this to be the case, it would explain his inability to find Morelet's material. However, neither specimen matches Reeve's figures.

cumingii

Ampullaria Cumingii King & Broderip, 1831: 344. in Sinu Panamæ, (Island of Saboga, in a small hill-stream). Type material: not found by us in BMNH (cf. Dance, 1986: 215); topotype: USNM 4673 (Morrison, 1946: 6). Distribution: Mexico [? error], Panama, Ecuador [? error] (Sowerby, 1909a: 348).

Remarks. Confusion over the type locality was clarified by Morrison (1952: 105–106), who considered the locality as originally published ("Saboga") to be correct.

dacostae

Ampullaria Da Costæ Sowerby, 1909a: 348 [name], 359 [description], text fig. Costa Rica. Syntype: BMNH 1909.10.19.35 (see also Sowerby, 1909a: 359). Distribution: Costa Rica.

decussata

Ampullaria decussata Moricand, 1836: 445, pl. 2, figs. 26, 27. Bahia [in publication title; Lake Baril, Brasil, according to the label associated with the MHNG syntypes]. Syntypes: HJ 21518 (2 spms.) (H. Mienis, pers. comm. to RHC, 4 August 2002), MCZ (2 lots; one of them is 141866), MHNG 33484 (9 spms.) (Y. Finet, pers. comm. to RHC, 26 August 2002), MNHN (2 lots, 13 spms.), ZMHB 109516 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: Brasil (Sowerby, 1909a: 348).

delattrei

Ampullaria Delattrei Fischer & Crosse, 1890: 246, pl. 48, fig. 7, 7a [1888: pl. 45, fig. 4, 4a]. Unjustified emendation of *lattrei* Reeve, 1856.

Remarks. Although the name was given as "*Delattrei*" by Fischer & Crosse (1888: [explanation of] pl. 45, fig. 4), this was not explicitly an emendation. The emendation was explicit in Fischer & Crosse (1890: 246), and therefore dates from 1890. Reeve (1856b: pl. 5, fig. 22) gave the collector's name incorrectly as "Lattre" and spelled the species name as "*Lattrei*". However, there is no evidence in the original publication of an inadvertent error

(Code Art. 32.5.1) that would justify the emendation. Although accepted by some (e.g., Martens, 1899: 419; Alderson, 1925: 31), the emendation has not been accepted by others (e.g., Hinkley, 1920: 53; Pain, 1964: 229) and so cannot be considered to be in prevailing use; it is therefore an unjustified emendation (Code Art. 33.2.3.1) and a junior objective synonym of *latticei* Reeve, 1856.

depressa

Ampullaria depressa Say, 1824: 264, pl. 14, fig. 2. East Florida ... tributary to St. John's river, and on the plantation of Mr. Fatio ... Lake George. Lectotype (Clench & Turner, 1956: 121; see also Baker, 1964: 168): ANSP 50580; paralectotype: ANSP 365373.

Remarks. Junior primary homonym of *depressa* Lamarck, 1804 [not Ampullariidae]. Replaced by *paludosa* Say, 1829.

+ *diffusa*

Pomacea bridgesi diffusa Blume, 1957: 1, [unnumbered text figs.; holotype]. Lagune mitten in der Stadt St. Cruz, Bolivia. Holotype: ZSM 20011991; paratypes: ZSM 20011990 (4 spms.) [? ex coll. Blume]; possible paratypes: ZSM 20011989 (c. 110 spms.) [? the "alle anderen Paratypoiden" (Blume, 1957: 2)]; Pain collection (1 spm.) (Blume, 1957: 2; E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: Brasil, Peru, Bolivia (Pain, 1960: 425).

Remarks. Possibly a valid species (F. Naggs, pers. comm. to RHC, 9 July 2002). The true identity and origin of the snails currently referred to widely as *bridgesii* Reeve, 1856, in the domestic aquarium trade (Perera & Walls, 1996) is not known; they may be more correctly referred to *diffusa* Blume, 1957.

dilatata

Ampullaria fasciata variété dilatata Orbigny, 1842c: 4. Cuba [in publication title]. Type material: not found by us in BMNH (nor listed by Gray, 1855: 27–29) or MNHN; not in MHNG (Y. Finet, pers. comm. to RHC, 20 August 2002) (cf. Dance, 1986: 219, 220). Distribution: Cuba.

Remarks. Synonym of *paludosa* Say, 1829, *teste* Pilsbry (1927a: 250).

disseminata

Ampullaria disseminata De Kay, 1843: 124. Unavailable name; first published as a junior synonym of *paludosa* Say, 1829, not made available before 1961 (Code Art. 11.6).

Remarks. DeKay (1843: 124) attributed the name to Say as a manuscript name, but the

name does not occur in Say's published writings (Binney, 1858: [237], 1865: 5).

dolioides

Ampullaria Dolioides Reeve, 1856c: pl. 16, fig. 75a, b. Bombay [error]. Syntypes: BMNH 20020653 (2 spms.). Distribution: Guyana, Surinam, French Guiana, Venezuela (Pain, 1950b: 65; Geijskes & Pain, 1957: 43; Tillier, 1980: 29).

Remarks. For a history of the interpretation of this species see Prashad (1925: 83; 1931: 167). Considered a synonym of *lineata* Spix, 1827, by Pain (1952: 31) but in error according to Geijskes & Pain (1957: 43), followed here, who treated it as a valid species, as did Tillier (1980: 29).

dolium

Ampullaria dolium Philippi, 1852a: 40, pl. 11, fig. 1 [1852b: 25]. Guyana, namentlich der Orinoco. Type material: probably MNHNS. Distribution: Guyana.

Remarks. Synonym of *urceus* Müller, 1774, *teste* Gaudion (1879: 41), Sowerby (1909a: 358), Alderson (1925: 10) and Baker (1930: 2).

dorbignyana

Ampullaria Dorbignyana Philippi, 1852a: 65, pl. 21, fig. 4. [The locality of Orbigny's specimen; "die La Plata Staaten" (Philippi, 1852a: 66)]. Holotype: the specimen illustrated in Orbigny's (1835a) figure (pl. 4, fig. 4), location not known to us. Distribution: "Brésil – Parana – Plata" (Gaudion, 1879: 35).

Remarks. Philippi (1852a: 65) explicitly described this species on the basis of Orbigny's (1835a) figure. Philippi (1852a: 49) also named it "*d'Orbigny*" [= *dorbigny*]. We select *dorbignyana*, the heading of Philippi's description and the more widely used alternative (e.g., Alderson, 1925: 21), as the correct original spelling. Synonym of *canaliculata* Lamarck, 1822, *teste* Ihering (1898: 49) and Sowerby (1909a: 348; 1909b: 363).

dorbigny

Ampullaria d'Orbignyi Philippi, 1852a: 49. Incorrect original spelling of *dorbignyana* Philippi, 1852.

+ *dysoni*

Ampullaria Dysoni Hanley, 1854: [unnumbered page], *Ampullaria* pl. 2, fig. 5. Honduras. Syntype: BMNH 1907.11.21.65. Distribution: Honduras (Martens, 1899: 417; Pain, 1964: 230).

Remarks. Subspecies of *flagellata* Say, 1829, *teste* Pain (1964: 230). Not listed among Hanley's taxa by Norris & Dance (2002: 371).

electrina

Ampullaria electrina Reeve, 1856c: pl. 20, fig. 95a, b. [No locality given.] Syntypes: BMNH 20020654 (3 spms.). Distribution: unknown.

Remarks. Sowerby (1909a: 349) placed it in *Pomacea* [as *Ampullaria*].

elegans

Ampullaria elegans Orbigny, 1835a: 33. Rio Piray, provincia Santa Cruz de la Sierra (republica Boliviana). Syntypes: BMNH 1854.12.4.330 (3 spms.), MNHN (4 lots, 14 spms.). Distribution: Bolivia.

Remarks. Synonym of *cyclostoma* Spix, 1827, *teste* Pain (1960: 430).

elongata

Ampullaria fasciata variété *elongata* Orbigny, 1842c: 4. Cuba [in publication title]. Type material: not found by us in BMNH (nor listed by Gray, 1854: 17) or MNHN, not in MHNG (Y. Finet, pers. comm. to RHC, 20 August 2002) (cf. Dance, 1986: 220). Distribution: Cuba.

Remarks. Synonym of *paludosa* Say, 1829, *teste* Pilsbry (1927a: 250).

+ erogata

Ampullaria erogata Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 46, figs. 6, 6a, 7 [Crosse & Fischer, 1890: 113; see also Fischer & Crosse (1890: 251)]. [No locality given. Peten, Guatemalae ... Cacoprieto, in isthmo de Tehuantepecensi, reipublicae Mexicanae (Crosse & Fischer, 1890: 113)]. Holotype: the specimen illustrated by Crosse & Fischer, in Fischer & Crosse (1888, fig. 6, 6a), not found by us in MNHN. Distribution: as for *flagellata* Say, 1829 (Pain, 1964: 230).

Remarks. Treated by Pain (1964: 229) as an "ecological race" of *flagellata* Say, 1829, occupying the same geographic range. Determining its true taxonomic status requires further study.

erronea

Ampullaria erronea Nevill, 1877: 17. S. America. Holotype: NZSI. Distribution: South America.

erythrostroma

Ampullaria erythrostroma Reeve, 1856c: pl. 13, fig. 59. Zanzibar [error (Sowerby, 1909a: 349; Pain, 1950b: 68)]. Type material: not found by us in BMNH. Distribution: Peru (Sowerby, 1909a: 349).

Remarks. Synonym of *guyanensis* Lamarck, 1822, *teste* Sowerby (1909a: 349), Kobelt (1913f: 186) and Pain (1960: 427), and hence of *urceus* Müller, 1774 (see Tillier, 1980: 27). **N. syn.**

eumicra

Ampullaria eumicra Crosse & Fischer, 1890: 113 [see also Fischer & Crosse (1890: 243, pl. 48, fig. 10, 10a)], provinciâ Oajaca dictâ, reipublicae Mexicanae. Syntypes: MNHN (4 spms.). Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

exculpta

Ampullaria malleata var. *Exculpta* Fischer & Crosse, 1890: 235 [1888: pl. 44, fig. 6, 6a–c; plate published without name]. in Laguna de los Cocos, provinciâ Vera Cruz ..., in paludibus prope Palizada et San Geromino, provinciâ Yucatan ..., in paludibus fluminis Usumasinta, prope Balancan, provinciâ Tabasco. Type material: Sallé collection, not found by us in BMNH, MNHN, etc. (cf. Dance, 1986: 209, 225). Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Baker (1922: 37) and Pain (1964: 227).

eximia

Ampullaria eximia Dunker, 1853: 93. die Provinz Coro am See von Maracaybo, Republik Venezuela. Syntypes: MCZ 125225, ZMHB 4039 (3 spms.) (M. Glaubrecht, pers. comm. to RHC, 4 May 2002, 1 March 2003). Distribution: Venezuela (Baker, 1930: 6).

falconensis

Pomacea falconensis Pain & Arias, 1958: 6, pl. 1, figs. 1–4, pl. 2, figs. 1–7. 5 km. SW de Chichiriviche, Estado Falcón, Venezuela (68° 152' W; 10° 502' N). Holotype: MHNS 4000 (female); paratypes: MHNS 3499 (7 spms.), NMW.Z.1981.118.00116 (Pain collection, 4 spms.), MCZ 224267 (2 spms.); ZSM 20012070 (1 spm.) (E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: Venezuela.

fasciata

Ampullaria fasciata Roissy, 1805: 374. les rivières de la Jamaïque, de la Guadeloupe et de Saint-Domingue [Haiti]. Type material: location not known to us. Distribution: Jamaica only, Guadeloupe and Haiti being incorrect (Pilsbry, 1927a: 248).

Remarks. Pilsbry (1927a: 247) clarified the status of this species as being from Jamaica, as Roissy had stated, and that it is not an Asian species in the synonymy of *ampullacea* Linnaeus, 1758 (which is now placed in *Pila*) as Sowerby (1909a: 354) had considered; that is, Roissy (1805: 374; see also Schumacher, 1817: 200) mistakenly included *ampullacea* Linnaeus, 1758, in his synonymy.

fasciata

Ampullaria fasciata Reeve, 1856b: pl. 9, fig. 41. [No locality given.] Lectotype (Kobelt, 1914b: 220): BMNH 20020655.

Remarks. Junior primary homonym of *fasciata* Roissy, 1805, and *fasciata* Lamarck, 1816 [*incertae sedis* in family Ampullariidae]. Synonym of *insularum* Orbigny, 1835, *teste* Sowerby (1909a: 353). Kobelt (1914b: 220) designated the specimen in Reeve's pl. 9, fig. 41 as a lectotype, copying the figure as his own pl. 77, fig. 1.

ferruginea

Ampullaria ferruginea Martens, 1857: 205. Unavailable name; *nom. nud.*

Remarks. Attributed to "R. pl. 14" [= Reeve, 1856b, pl. 14] with locality "Laplata". However, the name "*ferruginea*" does not appear in Reeve's work. Gaudion (1879: 29) also listed the name and said "Reev [sic] Hab: La Plata" but with no other information. Not listed by Sowerby (1916: 71), Ruhoff (1980: 271) or Kabat & Boss (1997: 208).

figulina

Ampullaria figulina Spix, in Wagner 1827: 3, pl. 4, fig. 4. [Type locality as for *lineata* Spix, 1827]. Syntypes: ZSM 20012063-5 (3 lots, 4 spms.) (E. Schwabe, pers. comm. to RHC, 28 July 2002; cf. Fechter, 1983: 221). Distribution: Brasil (Baker, 1914: 659).

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Spix illustrated *figulina* as a full species, but Wagner, in writing the description, treated *figulina* "Spix" as a variety of *lineata* "Wagner". Wagner at first sight appears to have also treated it as a synonym of his own new species-group name "minor". Cowie et al. (in prep.) discuss why this is not the case and why "minor" is not an available name. Alderson (1925: 29) considered *figulina* Spix, 1827, impossible to identify with certainty. Synonym of *lineata* Spix, 1827, *teste* Pain (1960: 422), followed here, although he cited pl. 6, fig. 4.

flagellata

Ampullaria flagellata Say, 1829c: 260. Mexico ... a short distance below Vera Cruz. Lectotype (Pilsbry, 1891a: 325–326): ANSP 50645 ["50645a" (Baker, 1964: 168)]; paralectotype: ANSP 50645; topotypes: MCZ 139677. Distribution: Central America, from central Mexico to Panama, extending into northern Colombia (Magdalena drainage area) (Pain, 1964: 228;

Naranjo-García & García-Cubas, 1986: 603).

Remarks. Although Baker (1964: 168) considered the type as fixed by monotypy ["TOM" (Baker, 1964: 149)], he also noted that this specimen was the "smaller and fresher of type lot", implying that there were additional specimens. Thus, Pilsbry (1891a: 325–326) in referring to a single specimen as "Say's type", and providing dimensions for it, designated a lectotype (*Code Art.* 74.6), for which Baker (1964: 168) gave the catalog number.

flatalis

Ampullaria flatalis Reeve, 1856b: pl. 7, fig. 31. Tabasco, Mexico. Syntype: BMNH 20020656. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

flava

Pomacea paludosa flava Smith, 1937: 147. canals near Pinecrest on the Tamiami Trail. Central Everglades and near Miami, Florida. Lectotype (Baker, 1964: 168): ANSP 188992 [as "188992a"]; paralectotype: ANSP 365372 (2 spms.). Distribution: Florida.

Remarks. Synonym of *paludosa* Say, 1829, *teste* Clench & Turner (1956: 120).

fumata

Ampullaria fumata Reeve, 1856e: pl. 26, fig. 124a, b. Province of Chiapas [= Chiapas], Mexico. Type material: not found by us in BMNH. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227). Discussed briefly by Strebel (1873: 32).

+ *garciae*

Pomacea paludosa garciae Richards, 1933: 169, fig. 21. swamp near the town of Mendoza (or Paso Real) about five kilometers from the terminus of the Ferro-Cariles Unidos de la Habana at Guane, Pinar del Rio, Cuba. Holotype: ANSP 160873 ["160873a" (Baker, 1964: 168)]; paratypes: ANSP 365371 (2 spms.); topotype: MCZ. Distribution: Cuba.

georgii

Ampullaria Georgii Williams, 1889: 47. marshes near the La Plata, at Buenos Ayres, in the Argentine Republic. Type material: location not known to us. Distribution: Argentina.

Remarks. Synonym of *insularum* Orbigny, 1835, *teste* Sowerby (1909a: 353).

ghiesbreghtii

Ampullaria Ghiesbreghtii Reeve, 1856e: pl. 26, fig. 123. Province of Chiapas [= Chiapas], Mexico. Syntype: BMNH 20020657. Distribution: Mexico, Guatemala (Pain, 1953: 222).

Remarks. Originally spelled “*Ghiesbrechti*” but explicitly emended to “*Ghiesbreghti*” by Fischer & Crosse (1890: 233). Although there is no evidence in the original publication of an inadvertent error (*Code* Art. 32.5.1) that would justify the emendation, the emendation is in prevailing use attributed to Reeve (e.g., Pilsbry, 1893: 338; Alderson, 1925: 44; Pain, 1953: 222, 1964: 228) and is therefore deemed to be a justified emendation (*Code* Art. 33.2.3.1). Synonym of *livescens* Reeve, 1856, *teste* Pain (1964: 228).

gigantea

Ampullaria ? *gigantea* Barbosa Rodrigues, 1892: 52. avec l'*Emys macrococcygeana* ... à la même époque géologique ... ; dans les ravins des environs du Río Nanay; Loreto-Yacu, dans l'étage tertiaire [probably near Loreto on the upper Amazon in Peru, above the junction with the Río Javari (Boss & Parodoz, 1977: 111)]. Type material: may have been lost (Patterson, 1936: 50; Boss & Parodiz, 1977: 111). Distribution: Peru.

Remarks. Fossil, probably Pliocene (Boss & Parodiz, 1977: 111). Junior secondary homonym of *giganteus* Tristram, 1864.

giganteus

Pomus giganteus Tristram, 1864: 414. Lake Peten, Vera Paz [Guatemala]. Type material: not found by us in BMNH (cf. Dance, 1986: 229). “Paratype” (Pain, 1953: 222) [= syntype]: NMW.Z.1981.118.00125 (Pain collection, 1 spm.). Distribution: Guatemala.

Remarks. Synonym of *livescens* Reeve, 1856, *teste* Pain (1964: 228).

gigas

Ampullaria gigas Spix, in Wagner, 1827: 1, pl. 1, figs. 1, 2. In flumine Amazonum. Type material: formerly in ZSM but probably lost (Alderson, 1925: 16; Fechter, 1983: 221; S. C. Thiengo, unpublished); possible syntype: MHNG 33489 (1 spm.) (Y. Finet, pers. comm. to RHC, 26 August 2002). Distribution: Brasil (Sowerby, 1909a: 350; Baker, 1914: 659).

Remarks. Authorship is given here as “Spix, in Wagner”, following Cowie et al. (in prep.). Synonym of *maculata* Perry, 1810, *teste* Pilsbry (1927b: 63), Pain (1956a: 79, 1960: 423), Geijskes & Pain (1957: 42) and Boss & Parodiz (1977: 112), *contra* Ihering (1919: 334), who synonymized it with *insularum* Orbigny, 1835.

gossei

Ampullaria Gossei Reeve, 1856c: pl. 20, fig. 93a, b. Jamaica. Syntypes: BMNH 20020658

(3 spms.). Distribution: Jamaica (Sowerby, 1909a: 351; Pilsbry, 1927a: 249).

guaduasensis

Ampullaria guaduasensis Anderson, 1928: 23, pl. 1, figs. 19, 20. near San Juan de Rio Seco, on the east border of the upper valley of the Magdalena River, Colombia. Holotype: CAS 2721. Distribution: Colombia.

Remarks. Pleistocene fossil (Boss & Parodiz, 1977: 118).

gualtieri

Amp. Gualtieri Orbigny, 1835a: 32. Unavailable name; first published as a junior synonym of *canaliculata* Lamarck, 1822, not made available before 1961 (*Code*, Art. 11.6).

Remarks. Name attributed to Sowerby by Orbigny (1835a: 32) but we have been unable to find it in any Sowerby work.

guatemalensis

Ampullaria flagellata var. *guatemalensis* Martens, 1899: 413, pl. 22, fig. 11, 11a. N. Guatemala: Panzos ... Cahabon ... W. Guatemala: Paso Antonio, in the lower part of the Río Michatoya, near the Pacific coast ... Cerro Zunil. Syntypes: MCZ [labeled as paratypes], ZMHB 109505 (4 spms.), 109506a (8 spms.), 109506b (1 spm.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003; F. Köhler, pers. comm. to RHC, 6 March 2003); no type material found by us in BMNH (cf. Dance, 1986: 218). Distribution: Guatemala.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Sowerby (1909a: 352 [as “Morelet ?”]).

guyanensis

Ampullaria Guyanensis Lamarck, 1822a: 176. les rivières de la Guyane. Lectotype (Tillier, 1980: 27): MHNG 1093/90 (Y. Finet, pers. comm. to RHC, 27 August 2002) (see also Sowerby, 1909a: 349; Mermod, 1952: 84; Pain, 1960: 427); probable paralectotypes: MNHN (2 spms., “coll. Lamarck”; 1 spm., “coll. Buffon”; see also Tillier, 1980: 27). Distribution: Brasil, Peru, Colombia, Venezuela, Guyana, French Guiana (Pain, 1960: 427).

Remarks. Subspecies of *urceus* Müller, 1774, *teste* Pain (1960: 426) and Geijskes & Pain (1957: 47). Synonym of *urceus* Müller, 1774, *teste* Tillier (1980: 27), followed here.

haemastoma

Ampullaria haemastoma Reeve, 1856b: pl. 7, fig. 34. Peru. Syntype: BMNH 20020659. Distribution: Peru.

Remarks. Synonym of *guyanensis* Lamarck, 1822, *teste* Sowerby (1909a: 351; 1909b: 363) and Alderson (1925: 12), and

hence of *urceus* Müller, 1774 (see Tillier, 1980: 27). **N. syn.**

hanleyana

Ampullaria hanleyana Alderson, 1926: 42. Type material: lost ["Hanley's type" is lost (Pain 1951: 146)]. Distribution: Brasil (Pain, 1960: 424).

Remarks. Introduced as a new name for *swainsoni* Hanley, 1854. However, Hanley (1854: [unnumbered page], *Ampullaria* pl. 1, fig. 1) clearly indicated that he thought he was illustrating *swainsoni* Philippi, 1852, not a new species. Thus, *swainsoni* Hanley, 1854, is not a homonym of *swainsoni* Philippi, 1852, as Alderson (1926: 42) thought, but a misidentification. Alderson's (1926: 42) new name and citing of Hanley's figure therefore constitutes the original description of this species. Not listed by Norris & Dance (2002: 377).

hanleyi

Ampullaria Hanleyi Reeve, 1856e: pl. 23, fig. 113. [No locality given.] Type material: not found by us in BMNH. Distribution: Río Paraná (Ihering, 1919: 336).

Remarks. Synonym of *pulchra* Griffith & Pidgeon [as "Gray"], 1834, *teste* Alderson (1925: 33, 1926: 42).

haustum

Ampullaria haustum Reeve, 1856b: pl. 5, fig. 23. River Marañon. Possible syntype: BMNH 20020660. Distribution: Brasil, Bolivia, Peru (Pain, 1960: 422–423).

Remarks. Synonym of *canaliculata* Lamarck, 1822, *teste* Ihering (1898: 49) and Thompson (1997: 91), but here retained as a distinct species because of its reported production of green eggs, in contrast to the pink eggs of *canaliculata* Lamarck, 1822 (Cowie, 2002).

hollingsworthi

Pila (Pomacea) hollingsworthi Pain, 1946a: 180; pl. 6, figs. 3–5. Colombia, in a swiftly flowing stream with a rocky bed near Bogota. Holotype: BMNH 1946.6.24.24; paratype: NMW.Z.1981.118.00198 (H. Wood, pers. comm. to RHC, 30 October 2001). Distribution: Colombia.

Remarks. Belongs in *Limnopomus* Dall, 1904, *teste* Pain (1946a: 181), although Pain agreed with Alderson (1925: 1) that *Limnopomus* Dall, 1904, is not a distinguishable taxon.

hondurasensis

Ampullaria Hondurasensis Reeve, 1856a: pl. 3, fig. 15. Honduras. Syntypes: BMNH 20020662 (2 spms.). Distribution: Honduras,

Guatemala (Nevill, 1884: 9), Nicaragua (Martens, 1899: 420).

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

hopetonensis

Ampullaria Hopetonensis Lea, 1834: 115, pl. 19, fig. 84. Hopeton, near Darien, Georgia. "Paratypes": MCZ 151580 (Clench & Turner, 1956: 121). Distribution: USA (Georgia).

Remarks. Synonym of *paludosa* Say, 1829, *teste* Alderson (1925: 29), Pilsbry (1927a: 249) and Clench & Turner (1956: 120).

immersa

Ampullaria immersa Reeve, 1856b: pl. 11, fig. 52. Rio Grande, Bolivia. Syntypes: BMNH 20020663 (1 spm.), MCZ [labeled as "cotypes"]; topotypes: MCZ. Distribution: Bolivia (Sowerby, 1909a: 351).

Remarks. Synonym of *canaliculata* Lamarck, 1822, *teste* Ihering (1898: 49). Synonym of *haustum* Reeve, 1856, *teste* Pain (1960: 422).

innexa

Ampullaria innexa Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 44, fig. 7, 7a–c [Crosse & Fischer, 1890: 111; see also Fischer & Crosse (1890: 242)]. [No locality given. Monte de Mistan, propé Coapan, in provinciã Oajaca, reipublicæ Mexicanæ (Crosse & Fischer (1890: 111).] Type material: not found by us in MNHN. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

insularum

Ampullaria insularum Orbigny, 1835a: 32. Rio Parana (republica Argentina). Syntypes: BMNH 1854.12.4.309-313 (7 spms.), MNHN (3 lots, 5 spms.), MHNG 33487 (2 spms.) (Y. Finet, pers. comm. to RHC, 26 August 2002). Distribution: Argentina, Brasil (Baker, 1914: 659).

Remarks. Synonym of *gigas* Spix, 1827, *teste* Ihering (1898: 49) and S. C. Thiengo (unpublished), followed here, although contrary to various authors (e.g., Baker, 1914: 659), who treated it as a valid species.

interrupta

Ampullaria interrupta Sowerby, 1909a: 353 [name], 361 [description], text fig. Laguna Urao, Venezuela. Syntype: BMNH 1909.10.19.33 (see also Alderson, 1925: 52; Pain, 1950a: 110). Distribution: Venezuela.

Remarks. Placed in *Limnopomus* Dall, 1904, by Sowerby (1909a: 361) and discussed as such by Pilsbry (1933: 75).

intropicta

Ampullaria intropicta Reeve, 1856d: pl. 21, fig. 101a, b. [No locality given.] Syntypes: BMNH 20020664 (3 spms.). Distribution: Brasil (syntype label).

Remarks. Synonym of *decussata* Moricand, 1836, *teste* Sowerby (1909a: 348).

labiosa

Ampullaria labiosa Philippi, 1852a: 58, pl. 18, fig. 5 [1852b: 28]. [No locality given.] Holotype ["das einzige Exemplar" (Philippi, 1852a: 58)]: Koch collection, location not known to us. Distribution: unknown.

Remarks. Philippi (1852a: 58) attributed the name to Koch. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227), though listed as from India by Paetel (1887: 479) and "Indes orientales" by Gaudion (1879: 32).

lamarckii

Ampullaria Lamarckii Philippi, 1852a: 67, pl. 21, fig. 5. [No locality given.] Type material: probably MNHNS. Distribution: unknown.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

lattrei

Ampullaria Lattrei Reeve, 1856b: pl. 5, fig. 22. Coban, Guatemala. Syntypes: BMNH 20020665 (2 spms.). Distribution: Guatemala (Martens, 1899: 419; Sowerby, 1909a: 354; Pain, 1964: 229).

Remarks. See *delattrei* Fischer & Crosse, 1890.

lemniscata

Ampullaria lemniscata Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 44, fig. 5, 5a–c [Crosse & Fischer, 1890: 112; see also Fischer & Crosse (1890: 248)]. [No locality given. coloniã anglicã Belize (Crosse & Fischer (1890: 112).] Syntypes: MNHN (4 spms.) (see also Sowerby, 1909b: 363). Distribution: Belize, Mexico (Sowerby, 1909a: 352).

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

leucostoma

Ampullaria leucostoma Swainson, 1823a: pl. 175. [No locality given.] Type material: possibly MMUE (Dean, 1936: 232; H. McGhie, pers. comm. to RHC, 29 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: Venezuela (Paetel, 1887: 479).

Remarks. Synonym of *urceus* Müller, 1774, *teste* Philippi (1852a: 54), Gaudion (1879: 41), Sowerby (1909a: 358) and Alderson (1925: 10).

levior

Ampullaria levior Sowerby, 1909a: 354 [name], 361 [description], text fig. Amazon River. Syntype: BMNH 1909.10.19.36. Distribution: Amazon River; Surinam, Brasil (Vernhout, 1914a: 28, 43).

Remarks. Synonym of *lineata* Spix, 1827, *teste* Pain (1960: 422).

lineata

Helix lineata Spix, in Wagner, 1827: 3, pl. 5, fig. 2. in aquis Provinciae Bahiensis, e.g. in fluvio Itahype [see also Thiengo (1987: 563)]. Syntypes: ZSM 20012054 (1 spm.), 20012066 (1 spm.), 20012074 (1 spm.) (E. Schwabe, pers. comm. to RHC, 28 July 2002; cf. Fechter, 1983: 221), MNHN (2 spms.). Distribution: Brasil, Guyana, French Guyana, Surinam (Sowerby, 1909a: 354; Baker, 1914: 660; Vernhout, 1914a: 43) [Brasil only, *teste* Pain (1960: 422)].

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Pain (1950b: 72) listed "*Helix liniata* Spix" in the synonymy of *crassa* Swainson, 1823 (although he cited Spix's pl. 5, fig. 1), but subsequently (Pain, 1960: 422), followed here, treated *lineata* Spix, 1827, as a valid species. Misspelled "*lineolata*" by Deshayes (1850: 44).

linnaei

Ampullaria Linnaei Philippi, 1852a: 62, pl. 20, fig. 6 [1852b: 29]. [No locality given.] Holotype ["eines ... Exemplares" (Philippi, 1852a: 62)]: probably MNHNS. Distribution: unknown.

Remarks. Synonym of *lineata* Spix, 1827, *teste* Sowerby (1909a: 354).

+ *livescens*

Ampullaria livescens Reeve, 1856b: pl. 5, fig. 21. [No locality given.] Syntype: BMNH 1986214. Distribution: Tabasco and Chiapas, Mexico; Lake Petén, northern Guatemala (Pain, 1964: 228).

Remarks. Subspecies of *flagellata* Say, 1829, *teste* Pain (1964: 228).

lutea

Poomacea [sic] *paludosa* Say var. *lutea* Farfante, 1942: 51. Unavailable name; *nom. nud.*

Remarks. Listed as a synonym of *paludosa* Say, 1829, by Clench & Turner (1956: 120).

lymnææformis

Ampullaria lymnææformis Reeve, 1856b: pl. 8, fig. 39. River Marañon. Syntypes: BMNH 20020666 (2 spms.). Distribution: Peru.

Remarks. Synonym of *aulanieri* Deville & Huppé, 1850, *teste* Pain (1960: 424). Frequently spelled "*lymnaeiformis*".

maculata

Pomacea maculata Perry, 1810c: [unnumbered plate and text] [= pl. 12 (Mathews & Iredale, 1912: 11; Geijskes & Pain, 1957: 42; R. E. Petit, pers. comm. to RHC, 16 October 2000)]. the South Sea [error; Mathews & Iredale, 1912: 11]. Type material: not found by us in BMNH (cf. Dance, 1986: 221). Distribution: Brasil, Peru (Pain, 1960: 423).

Remarks. Possibly a synonym of *urceus* Müller, 1774, *teste* Berthold (1991: 248).

malleata

Ampullaria malleata Jonas, 1844: 35 [1846: 122, pl. 10, fig. 11, 11a, 11b]. Juxta Tabasco, urbem Mexicanum. Lectotype ["le type de Jonas" (Fischer & Crosse, 1890: 237)]; probably ZMHB 109515 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003; F. Köhler, pers. comm. to RHC, 6 March 2003, 20 March 2003); possible paralectotypes [labeled paratypes]: MCZ. Distribution: Mexico.

Remarks. Fischer & Crosse (1890: 237) stated that the "type" of Jonas was collected in Tabasco by Fokkes. Martens (1899: 412) mentioned two specimens, one collected from Tabasco by Fokkes and given by Jonas to Dunker, and another, from the Dunker collection, illustrated by Martens (1899: pl. 22, fig. 10) but with no mention of its collector or whether it had ever been in Jonas' possession. Although Martens (1899: 412) suggested that the latter specimen might be Jonas' "type", it seems more likely that the former is the "type" and that it is the specimen indicated as such by Fischer & Crosse (1890: 237). Martens' figure and that of Jonas (1846: fig. 11) are almost identical. Jonas gave his collection to ZMUH, which would explain the statement of Fischer & Crosse (1890: 237) that Jonas' "type" was there. Martens, however, stated that both his specimens were from the Dunker collection, in ZMHB, and the specimen ZMHB 109515 almost perfectly matches Jonas' figure, even to the small depression in the lower rim of the aperture (F. Köhler, pers. comm. to RHC, 20 March 2003). This probably came about through donation or exchange, as Dunker certainly exchanged material with collectors in Hamburg, because there is material of other taxa from him that ZMUH obtained from the Altonaer Museum (another museum in

Hamburg) after the ZMUH collections were destroyed in the Second World War (B. Hausdorf, pers. comm. to RHC, 10 March 2003). However, it yet could be that Fischer & Crosse (1890: 237) and Martens (1899: 412), although both referred to the "type", were actually referring to different shells. Synonym of *flagellata* Say, 1829, *teste* Baker (1922: 37) and Pain (1964: 226).

manco

Pomacea manco Pilsbry, 1944: 145, pl. 11, figs. 31, 32. collecting station 161, on the Pachitea River, about one mile upstream from Quebrada Sungarillo. Holotype: ANSP Invertebrate Paleontology 4596 ["4596a" (Baker, 1964: 168)]; paratypes: ANSP Invertebrate Paleontology 78898 (2 spms.). Distribution: Peru (Boss & Parodiz, 1977: 110).

Remarks. Fossil. Placed in *Limnopomus* Dall, 1904, by Parodiz (1969: 110).

manetou

Pila Manetou Röding, 1798: 145. [No locality given.] Type material: possibly Art and Natural History Museum, Gotha (Stewart, 1930: 35; Dance, 1986: 206). Distribution: unknown.

Remarks. Synonym of *urceus* Müller, 1774, *teste* Baker (1930: 2).

+ marginatra

Ampullaria marginatra Jonas, 1845: 169. [No locality given.] Type material: "in Museo hon. Gruner" (Jonas, 1845: 169), ZMHB 29964 (lost; M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: unknown.

Remarks. Variety of *zonata* Spix, 1827, *teste* Philippi (1851: 10; 1852a: 63, 74) and Sowerby (1909a: 359).

martensiana

Ampullaria (Pomus) martensiana Nevill, 1884: 10. New name for *columbiensis* Reeve, 1856; *non* Philippi, 1851. Distribution: Colombia.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

martinezi

Ampullaria Martinezi Hidalgo, 1866: 345, pl. 14, fig. 5. Santa-Rosa, Reipublicæ Æquatoris [Ecuador]. Lectotype: MNHN (Fischer-Piette, 1950: 68); paralectotypes: MNHN (1 spm) (Fischer-Piette, 1950: 68), MNCN 15.05/7524 (1 spm.), 15.05/12306 (7 spms.) (Villena et al., 1997: 75). Distribution: Ecuador (Miller, 1879: 151; Sowerby, 1909a: 354).

melanocheila

Ampullaria melanocheila Reeve, 1856b: pl. 5, fig. 24. [No locality given.] Syntype: BMNH

20020667. Distribution: Brasil (Paetel, 1887: 480).

Remarks. Synonym of *sordida* Swainson, 1823, *teste* Sowerby (1909a: 357).

melanostoma

Ampullaria reflexa Var. *melanostoma* Philippi, 1852a: 35, 58, pl. 18, fig. 4. [No locality given.] Syntype: ZMHB 109500 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); type material possibly also in MNHNS. Distribution: unknown.

Remarks. Philippi (1852a: 35) attributed the name to "Parr. in litt." Synonym of *malleata* Jonas, 1844, *teste* Martens (1857: 189, 207), but a variety of *flagellata* Say, 1829, *teste* Martens (1899: 411). Treated here as a synonym of *flagellata* Say, 1829. **N. Syn.**

meridaensis

Pomacea (Limnopomus) meridaensis Pain, 1950a: 109. Merida, Venezuela. Holotype (Pain, 1950a: 110): the specimen figured by Alderson (1925: pl. 11, fig. 7); paratypes: Alderson collection (Pain, 1950a: 110), HUU 21517 (1 spm.) (H. Mienis, pers. comm. to RHC, 4 August 2002), MCZ 171558 (2 spms.), FMNH (1 spm.), ZSM 20012068 (1 spm.; ex Alderson collection) (E. Schwabe, pers. comm. to RHC, 29 July 2002). Distribution: Venezuela.

Remarks. Synonym of *camena* Pain, 1949, *teste* Pain (1957: 175).

mermodi

Ampullaria mermodi Sowerby, 1919: 152, [un-numbered text figure]. Central America. Syntypes: MHNG 33490 (3 spms.) (Y. Finet, pers. comm. to RHC, 26 August 2002; see also Tillier, 1980: 19 [as "Sowerby, 1905"]). Distribution: ? Guyana, ? Central America (Pain, 1950b: 72).

Remarks. Pain (1950b: 72) stated that this species was founded on a single specimen. However, this was not made explicit by Sowerby (1919: 152–153), who described it from "photographs" sent to him by Mermod. Tillier (1980: 19) indicated that Sowerby's (1919: 152) figure illustrated the largest of three syntypes.

meta

Ampullaria meta Ihering, 1915: 12, pl. [3], figs. 6, 7. Cidade da Barra, Rio S. Francisco River, Bahia. Holotype: MNRJ. Distribution: Brasil.

+ metcalfei

Ampullaria Metcalfei Reeve, 1856e: pl. 25, fig. 119a, b. [No locality given.] Type material: not found by us in BMNH. Distribution: Venezuela (Baker, 1930: 4).

Remarks. Possibly a synonym of *vexillum* Reeve, 1856, *teste* Alderson (1925: 14). Subspecies of *swainsoni* Philippi, 1852, *teste* Baker (1930: 4), although he noted collections containing both forms and a "good series of intermediates".

mexicana

Ampullaria Mexicana Martens, 1857: 207. Unavailable name; *nom. nud.*

Remarks. Listed by Martens (1857: 207) as a manuscript name of Philippi; also listed by Gaudion (1879: 33). Treated as a synonym of *malleata* Jonas, 1844, by both these authors. Also listed by Paetel (1873: 65, 1887: 480).

+ miamiensis

Ampullaria miamiensis Pilsbry, 1899: 365 [1927a: 252, pl. 22, figs. 5 (lectotype), 6, 7]. creek flowing from the Everglades near Miami, Dade County, in southeastern Florida. Lectotype (Pilsbry, 1927a: 253; see also Baker, 1964: 168): ANSP 77369; paralectotypes: ANSP 361441 (59 spms., uncounted juveniles), CMNH 62.19966 (1 spm.), 62.33743 (1 spm.) (Parodiz & Tripp, 1988: 141), USNM (1 spm.) [labeled as "cotype"], MCZ ("paratypes"; Clench & Turner, 1956: 122). Distribution: Florida.

Remarks. Treated by Clench & Turner (1956: 122) as a "race" or "local population" of *paludosa* Say, 1829, but not formally synonymized.

miltocheilus

Ampullaria miltocheilus Reeve, 1856e: pl. 25, fig. 120a, b. Province of Chiapas [= Chiapas], Mexico. Lectotype ["Le type"; Fischer & Crosse (1890: 248)]; BMNH 20020668/1; paralectotypes: 20020668/2-5 (5 spms.); based on our study of the BMNH material. Distribution: Mexico.

Remarks. Variety of *ghiesbreghtii* Reeve, 1856, *teste* Martens (1899: 418). Synonym of *cumingii* King & Broderip, 1831, *teste* Sowerby (1909a: 348). Probably a synonym of *quitensis* Busch, 1859, *teste* Alderson (1925: 44). Not a synonym of *ghiesbreghtii* Reeve, 1856, *teste* Pain (1953: 223), who also remarked on its shell "resembling species of *Limnopomus*".

miltochilus

Ampullaria miltochilus Fischer & Crosse, 1890: 247. Unjustified emendation of *miltocheilus* Reeve, 1856.

+ minor

Ampullaria (Pomus) gigas var. *minor* Nevill, 1884: 9. les environs de Corrientes, et sur les

rivages de la Plata, près de Buenos-Ayres [locality given by Orbigny (1838d: 372) for the variety illustrated in his pl. 50, fig. 5]. Holotype/syntypes: the specimen(s) illustrated by Orbigny (1838e: pl. 50, figs. 5, 6) [the two figures probably illustrate a single (live) specimen but this is not certain], location not known to us. Distribution: La Plata (Orbigny, 1838d: 372), Rio Parana (Nevill, 1884: 9).

Remarks. Name proposed by bibliographic reference to Orbigny (1838e: pl. 50, figs. 5, 6). Junior primary homonym of *minor* Nevill, 1877, which is now placed in *Pila Röding*, 1798.

modesta

Ampullaria modesta Busch, 1859: 168. Ecuador. Type material: location not known to us. Distribution: Ecuador (Miller, 1879: 150).

monachus

Ampullaria monachus Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 46, fig. 5, 5a [Crosse & Fischer, 1890: 112 [as "*monacha*"]; see also Fischer & Crosse (1890: 250)]. [No locality given. Santa Efigenia, in Isthmo Tehuantepecensi, reipublicae Mexicanae (Crosse & Fischer (1890: 113)]. Holotype: the specimen illustrated by Crosse & Fischer, in Fischer & Crosse (1888, fig. 5, 5a), not found by us in MNHN. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

monstrosa

Ampullaria fasciata var. *monstrosa* Sowerby, 1825: 44. Unavailable name; *nom. nud.*

Remarks. Not listed by Sherborn (1922–1933).

nais

Pomacea nais Pain, 1949a: 257; pl. 13, figs. 3, 4. small stream on the south bank of the Amazon near Obidos, Brasil. Holotype: BMNH 1947.2.3.1 [not 1946.2.3.1, as stated by Pain (1949a: 257)]; paratype: NMW.Z.1981.118.00093 (Pain collection, 1 spm.). Distribution: Brasil (Pain, 1960: 424).

Remarks. May be a "local race" of *lineata* Spix, 1827, *teste* Pain (1960: 424).

nigrilabris

Ampullaria nigrilabris Philippi, 1852a: 65, pl. 21, fig. 2 [1852b: 29]. [No locality given.] Type material: probably MNHNS. Distribution: "Rio Janeiro" (Gaudion, 1879: 34; Sowerby, 1909a: 355; see also Paetel, 1873: 65, 1887: 480).

nobilis

Ampullaria nobilis Reeve, 1856a: pl. 2, fig. 8. River Marañon. Possible syntype: BMNH

20020669; topotypes: ANSP 120276 (Baker, 1930:3). Distribution: Venezuela (Baker, 1930: 3), East Peru (Sowerby, 1909a: 354), Brasil (Baker, 1914: 660).

Remarks. Synonym of *guyanensis* Lamarck, 1822, *teste* Pain (1960: 427), and hence of *urceus* Müller, 1774 (see Tillier, 1980: 27). **N. Syn.**

notabilis

Ampullaria notabilis Reeve, 1856c: pl. 14, fig. 63. [No locality given.] Syntype: BMNH 20020670. Distribution: Peru (Sowerby, 1909a: 355) [? error; Alderson, 1925: 45; Pilsbry, 1927a: 250].

Remarks. Synonym of *nubila* Reeve, 1856, *teste* Paetel (1887: 480). Possibly a synonym of *paludosa* Say, 1829, *teste* Alderson (1925: 45) and Pilsbry (1927a: 250). Retained here as a distinct species, pending further study.

novaegranadae

Ampullaria novae-granadae Busch, 1859: 169. New Granada [in 1859 = present-day Colombia and Panama]. Syntypes: BMNH 20020671 (2 spms.). Distribution: Colombia and/or Panama.

oajacensis

Ampullaria malleata var. *Oajacensis* Fischer & Crosse, 1890: 235 [1888: pl. 46, fig. 3, 3a, 3b; plate published without name]. Monte de Mistam, prope Coapam, provinciae Oajaca. Type material: Sallé collection, not found by us in BMNH, MNHN, etc. (cf. Dance, 1986: 209, 225). Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

oblonga

Ampullaria oblonga Swainson, 1823a: pl. 136, middle figs. [No locality given.] Syntypes: "in the late Mrs. Bligh's collection" (Swainson, 1823a: pl. 136), location not known to us. Distribution: Venezuela (Philippi, 1851: 21; Sowerby, 1909a: 355), Guadeloupe (Gaudion, 1879: 35).

Remarks. Synonym of *urceus* Müller, 1774, *teste* Pain (1960: 426), but retained here as a valid species based on our own observations (S. C. Thiengo, unpublished).

ocanensis

Ampullaria (aurisformis var. ?) *ocanensis* Kobelt, 1914b: 222, pl. 77, figs. 4, 5 [1914e: 177]. Ocaña in Neu-Granada [= Colombia]. Figured specimen (Kobelt, 1914b: figs. 4, 5): ZMUH [destroyed; B. Hausdorf, pers. comm. to RHC, 3 May 2002]. Distribution: Colombia.

occlusa

Ampullaria occlusa Crosse & Fischer, in Fischer & Crosse, 1888: [explanation of] pl. 45, fig. 3, 3a–c [Crosse & Fischer, 1890: 111; see also Fischer & Crosse (1890: 244)]. [No locality given. Tanesco, Guatemalæ (Crosse & Fischer (1890: 112).] Syntypes: MNHN (2 lots, 11 spms.) (see also Sowerby, 1909b: 363). Distribution: Guatemala.

Remarks. Synonym of *flagellata* Say, 1829, teste Pain (1964: 227).

ochracea

Ampullaria ochracea Jay, 1836: [85 (explanation of pl. 3)], pl. 3, fig. 8 [1839: [explanation of pl. 3, fig. 8]. Spanish Maine [= isthmus of Panama to mouth of Orinoco River]. Syntypes: AMNH 56106 (1 spm.) [labeled as “figd type” in Jay’s handwriting (P. M. Mikkelsen, pers. comm. to RHC, 7 May 2002)], 56106A (1 spm.); additional 6 syntypes [Jay (1839: 116) mentioned 8 spms. in total]: location not known (Boyko & Cordeiro, 2001: 16).

Remarks. Synonym of *flagellata* Say, 1829, teste Martens (1899: 405) and Pain (1964: 226).

+ olivacea

Ampullaria olivacea Spix, in Wagner, 1827: 2, pl. 3, fig. 1. in fluminibus Amazonum, Solimoès, Japurá allisque in interiore continente Brasiliæ aequatorialis. Type material: probably lost (Fechter, 1983: 221; S. C. Thiengo, unpublished). Distribution: Brazilian Amazon (Pain, 1960: 428).

Remarks. Authorship is given here as “Spix, in Wagner”, following Cowie et al. (in prep.). Junior primary homonym of *Ampullaria olivacea* Lamarck, 1816. However, Lamarck (1822a: 178), followed by Philippi (1852a: 28), placed *olivacea* Lamarck, 1816, in the synonymy of *Ampullaria guinaica* Lamarck, 1822, which has long been placed in the African genus *Lanistes* (e.g., Nevill, 1884: 14). Thus, because *olivacea* Spix, 1827, and *olivacea* Lamarck, 1816, have not been considered congeneric after 1899, no replacement name is provided and the case must be referred to the ICZN for a ruling (Code, Art. 23.9.5). Wagner (1827: 2) listed the older name *guyanensis* Lamarck, 1822, in synonymy. However, Pain (1960: 427), followed here, treated *olivacea* Spix, 1827, as a subspecies of *urceus* Müller, 1774, and distinct from *guyanensis* Lamarck, 1822.

oviformis

Ampullaria oviformis Deshayes, 1830a: 34. Cayenne. Syntypes: MNHN (2 lots, 2 spms.). Distribution: French Guiana (Sowerby, 1909a: 355) [? error; Tillier, 1980: 16].

Remarks. The two syntypes are clearly two different species, indicating the need for further study to clarify this species’ true identity (see also Tillier, 1980: 16).

palmeri

Ampullaria palmeri Marshall, 1930: 4, pl. 1, figs. 5, 8. small stream in dense jungle, 13 kilometers south of Puerto Santos, Province of Santander del Norte, Republic of Colombia. Holotype: USNM 380696; paratypes: USNM 380697. Distribution: Colombia.

paludosa

Ampullaria paludosa Say, 1829c: 260. New name for *depressa* Say, 1824, non Lamarck, 1804. Distribution: USA (Alabama, Georgia, Florida), Cuba (Clench & Turner, 1956: 122; Cowie, 1997b: 5).

papyracea

Ampullaria papyracea Spix, in Wagner, 1827: 3, pl. 4, figs. 1, 2. in fluviis et stagnis Provinciarum Bahiensis, Pernambucanae et Piauiensis. Syntypes: ZSM 20012059 (2 spms.) (E. Schwabe, pers. comm. to RHC, 28 July 2002; see also Fechter, 1983: 221). Distribution: Brasil, Peru, Venezuela, Guyana, Surinam, French Guiana (Pain, 1950b: 66, 1960: 429).

Remarks. Authorship is given here as “Spix, in Wagner”, following Cowie et al. (in prep.).

patula

Ampullaria patula Reeve, 1856d: pl. 21, fig. 100a, b. [No locality given.] Syntypes: BMNH 20020673 (3 spms.). Distribution: Amazon, Brasil, New Granada [= Colombia and Panama] (Walker, in Baker, 1922: 39).

Remarks. Junior primary homonym of *patula* Lamarck, 1804, which is now placed in the family Naticidae (see also Lamarck, 1822b: 549). Not listed by Sowerby (1912: 72).

pealiana

Ampullaria pealiana Lea, 1838: 16, pl. 23, fig. 77. Turbaco, Colombia, South America. Lectotype [as “Figured holotype”] (Abbott, 1955: 126, pl. 4, fig. 2): ANSP 192933; paralectotypes: MCZ 161600. Distribution: Ecuador, Colombia (Pain, 1956a: 78), Venezuela (Paetel, 1887: 480), Panama (Martens, 1899: 423).

Remarks. We treat “*pealeana*” Philippi, 1852 (1852a: 62) as an incorrect subsequent spelling.

penesma

Ampullaria penesma DeKay, 1843: 124. Unavailable name; first published as a junior synonym of *paludosa* Say, 1829, not made available before 1961 (Code Art. 11.6).

Remarks. DeKay (1843: 124) attributed the name to Say as a manuscript name, but the name does not occur in Say's published writings (Binney, 1858: [237], 1865: 5).

periscelis

Pila periscelis Röding, 1798: 146. [No locality given.] Type material: possibly Art and Natural History Museum, Gotha (Stewart, 1930: 35; Dance, 1986: 206).

Remarks. Possibly a synonym of *chemnitzii* Philippi, 1852, *teste* Baker (1930: 5).

peristomata

Ampullaria peristomata Orbigny, 1835a: 33. Guarayos (republica Boliviana). Syntypes: BMNH 1854.12.4.331 (10 spms.), MNHN (2 lots, 6 spms.). Distribution: Brasil (Baker, 1914: 660), Peru (Paetel, 1888: 481), Bolivia.

Remarks. Synonym of *cumingii* King & Broderip, 1831, *teste* Sowerby (1909a: 348) and Kobelt (1912h: 141), and of *elegans* Orbigny, 1835, *teste* Gray (1855: 29), but treated as a valid species by Baker (1914: 660), followed here. The BMNH and MNHN syntype lots are clearly two different species, indicating the need for further study to clarify this species' true identity.

pernambucensis

Ampullaria Pernambucensis Reeve, 1856d: pl. 22, fig. 103. Pernambuco. Syntypes: BMNH 20020674 (3 spms.). Distribution: Brasil.

+ pertusa

Ampullaria pertusa Sowerby, 1894: 48, pl. 4, fig. 22. [No locality given.] Holotype (the single specimen on which the description was explicitly based): BMNH 20020675 (figured also by Pain, 1949b: pl. 1, figs. 3, 4). Distribution: Venezuela (Sowerby, 1909a: 355, Pain, 1949b: 39).

Remarks. Variety of *castelloi* Sowerby, 1894, *teste* Pain (1949b: 39).

phaeostoma

Ampullaria phaeostoma Philippi, 1852a: 45, pl. 13, fig. 3 [1852b: 26]. [No locality given.] Type material: probably MNHNS. Distribution: "Haut-Amazone" (Gaudion, 1879: 37) [? error].

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

physis

Ampullaria physis Hupè, 1857: 67, pl. 12, fig. 2 [two figs.]. le fleuve des Amazones. Syntypes: MNHN (2 lots, 4 spms.). Distribution: Amazon River (Sowerby, 1909a: 356).

Remarks. Synonym of *lineata* Spix, 1827, *teste* Pain (1960: 422).

physoides

Ampullaria Physoides Reeve, 1856d: pl. 22, fig. 107a, b. Pernambuco. Syntypes: BMNH 20020676 (4 spms.). Distribution: Brasil, India [error; one of the BMNH syntypes has a horny operculum, indicating its New World origin] (Paetel, 1888: 481).

picta

Ampullaria picta Reeve, 1856e: pl. 24, fig. 117a, b. [No locality given.] Syntypes: BMNH 1907.11.21.91-92 (2 spms.). Distribution: Mexico (Mazatlan) (Sowerby, 1909a: 356).

pinei

Ampullaria Pinei Dall, 1898: 75. Homosassa River, Florida. Possible syntype: USNM 152699 [labeled as the figured "type", although Dall (1898: 75-76) did not designate or figure a type]. Distribution: USA.

Remarks. Synonym of *paludosa* Say, 1829, *teste* Clench & Turner (1956: 120).

poeyana

Ampullaria poeyana Pilsbry, 1927a: 251, pl. 21, figs. 7, 8 ["Type"], 9. New name for *cubensis* Reeve, 1856, *non* Morelet, 1849. Distribution: Cuba.

Remarks. Pilsbry (1927a: 251, 253) provided this name as a "n. sp." and designated a "holotype" (ANSP 50618) ["50618a" (Baker, 1964: 168)]. Two specimens from the same lot are now ANSP 365370. However, Pilsbry was simply providing a replacement name for *cubensis* Reeve, 1856, so the type material of this species is Reeve's and Pilsbry's designation of a holotype is invalid. Although *cubensis* Reeve, 1856, has been considered a variety or synonym of *glauca* Linnaeus, 1758 (which is listed here under *Pomacea* subg. *Effusa* Jousseaume, 1889), we follow Pilsbry (1927a: 251-252) in retaining *poeyana* Pilsbry, 1927, as a valid species in *Pomacea* s. str.

pomatia

Ampullaria pomatia Martens, 1857: 194. Brasilien. Syntypes: ZMHB 1366a (3 spms.), 1366b (3 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: Brasil.

pomum

Ampullaria pomum Philippi, 1851: 13, pl. 3, figs. 3, 4 [1852b: 20]. [No locality given.] Type

material: probably MNHNS. Distribution: unknown.

porphyrostoma

Ampullaria porphyrostoma Reeve, 1856b: pl. 6, fig. 30. [No locality given.] Syntypes: BMNH 20020677 (3 spms.). Distribution: Venezuela (Baker, 1930: 5), New Granada [= present-day Colombia and Panama from 1830 to 1903 and Colombia only from 1903 on] (Sowerby, 1909a: 353).

Remarks. Synonym of *chemnitzii* Philippi, 1852, *teste* Baker (1930: 5) and Pain (1956a: 74).

prasina

Ampullaria malleata var. *Prasina* Fischer & Crosse, 1890: 235, pl. 48, fig. 4, 4a. Misantla, provinciae Vera Cruz. Type material: not found by us in MNHN. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

producta

Ampullaria producta Reeve, 1856c: pl. 15, fig. 68a, b. [No locality given.] Syntypes: BMNH 20020678 (3 spms.). Distribution: "F. Magdalen" [= Colombia] (Paetel, 1888: 481), Amazon River (Sowerby, 1909a: 356), Neu-Granada [= Colombia and/or Panama] (Kobelt, 1913h: 205).

pourceus

Pomacea (Pomacea) pourceus Boss & Parodiz, 1977: 110, figs. 1–4. Chicocoa (a single farmhouse on the east bank of the Río Huallaga ...), east of Chasuta [Chazuta] (6° 35' S; 76° 11' W), the Río Huallaga, Department of San Martín, Peru. Holotype: MCZ 272899. Distribution: Peru.

Remarks. Tertiary fossil, possibly middle or late Eocene (Boss & Parodiz, 1977: 110).

pulchra

Paludina pulchra Griffith & Pidgeon, 1834b: 599, pl. 1, fig. 6 [pl. 1 predated p. 599 and was possibly published in 1833 (Cowan, 1969: 139)]. [No locality given.] Syntype: BMNH 20020680. Distribution: South America (Sowerby, 1909a: 356).

Remarks. Name attributed to Gray by Griffith & Pidgeon (1834b: 599). Placed in *Pomacea* [as *Ampullaria*] by Sowerby (1909a: 356).

puncticulata

Ampullaria puncticulata Swainson, 1823a: pl. 143, figs. 3, 4 [middle figs.]. [No locality given.] Type material: possibly MMUE (Dean, 1936: 232; H. McGhie, pers. comm. to RHC, 28 July 2002), not found by us in BMNH (cf.

Dance, 1986: 227). Distribution: Brasil [error] (Drouët, 1859: 81), Colombia, Guyana, French Guiana (Pain, 1950b: 72); also Venezuela (Gaudion, 1879: 38). Spelled as "*punctulata*" by Mousson (1873: 18), Paetel (1888: 481) and Ihering (1919: 332).

Remarks. Synonym of *guyanensis* Lamarck, 1822, *teste* Pain (1960: 426), and hence of *urceus* Müller, 1774 (see Tillier, 1980: 27). **N. Syn.**

puntaplaya

Ampullaria puntaplaya Cousin, 1887: 278, pl. 4, fig. 2. Punta-Playa. Syntypes: MNHN (2 lots, 4 spms.). Distribution: Ecuador (Sowerby, 1909a: 356).

+ purpurascens

Ampullaria purpurascens Guppy, 1864: 243. Trinidad [in publication title]. Syntypes (Guppy, 1864: 248): BMNH, not found by us. Distribution: Trinidad (Sowerby, 1909a: 356).

Remarks. Treated as a variety of *urceus* Müller, 1774, by Guppy (1866: 44).

+ pyrum

Ampullaria pyrum Philippi, 1851: 18, pl. 5, fig. 2 [1852b: 21]. Brasilien. Syntype: ZSM 20012060 (E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: Brasil (Gaudion, 1879: 38).

Remarks. Variety of *hopetonensis* Lea, 1834 (= *paludosa* Say, 1829), *teste* Sowerby (1909a: 353), but note the skepticism of Pain (1964: 225) regarding this. Either it is not a variety (or synonym) of *paludosa* Say, 1829, or the locality (Brasil) is incorrect.

quercina

Ampullaria quercina Spix, in Wagner, 1827: 2, pl. 3, fig. 2. in fluminibus Amazonum, Solimoès, Japurá alliisque in interiore continente Brasiliae aequatorialis [as for *olivacea* Spix, 1827]. Syntype: ZSM 20012061 (E. Schwabe, pers. comm. to RHC, 28 July 2002; cf. Fechter, 1983: 221). Distribution: Amazon drainage (Pain, 1960: 428).

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.), who also explain the publication history of this work. Spix illustrated *quercina* as a full species, but Wagner, in writing the description, treated *quercina* "Spix" as a variety of *olivacea* Spix, 1827. Retained as a variety by Sowerby (1909a: 355), but treated here as a distinct species, following Pain (1960: 428). Berthold (1991: 23) placed *quercina* "Wagner non Spix" in *Pomacea* subg. *Effusa* Jousseaume, 1889.

quitensis

Ampullaria quitensis Busch, 1859: 168. Ecuador. Type material: location not known to us. Distribution: Ecuador (Miller, 1879: 149).

Remarks. Synonym of *cumingii* King & Broderip, 1831, *teste* Sowerby (1909a: 348).

reflexa

Ampullaria reflexa Swainson, 1823b: 377 [1823a: pl. 172]. [No locality given.] Type material: possibly MMUE (Dean, 1936: 232; H. McGhie, pers. comm. to RHC, 28 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: Cuba (Paetel, 1873: 65, 1888: 481; Sowerby, 1909a: 353; Henderson, 1916: 322) [error; Alderson, 1925: 34]; Colombia (Alderson, 1925: 34; Pain, 1964: 224).

Remarks. Alderson (1925: 31, 34) discussed the confused history of misidentification of *reflexa* Swainson, 1823, confusion that apparently continues, as it was considered a synonym of *paludosa* Say, 1829, by Yong & Perera (1984: 121). Considered either a variety of *flagellata* Say, 1829, or a distinct species by Alderson (1925: 34). Retained here as a distinct species, following Pain (1964: 224).

retusa

Ampullaria retusa Philippi, 1851: 18, pl. 5, fig. 1 [1852b: 21]. Guyana, namentlich der Rio Rupunin, und Brasilien [? error]. Syntype: ZMHB 1339 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); type material possibly also in MNHNS. Distribution: Brasil, Guyana (Martens, 1857: 188, 1899: 424; Gaudion, 1879: 39) [? error].

Remarks. Name attributed to Olfers by Philippi (1851: 18; 1852b: 21). Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227). However, *flagellata* Say, 1829, is a Central American species, extending southwards only into northern Colombia (Pain, 1964: 228), suggesting either that the localities given for *retusa* Philippi, 1851, are incorrect or that Pain was incorrect in synonymizing the two species.

reyrei

Ampullaria Reyrei Cousin, 1887: 279, pl. 4, fig. 7. Napo. Probable syntype: MNHN; topotype: MCZ 92312. Distribution: Ecuador (Sowerby, 1909a: 357).

robusta

Ampullaria robusta Philippi, 1852a: 50, pl. 15, figs. 4, 5 [1852b: 27]. [No locality given.] Type material: probably MNHNS. Distribution: unknown.

Remarks. Synonym of *columellaris* Gould, 1848, *teste* Alderson (1925: 54).

rugosa

Ampullaria rugosa Lamarck, 1801: 93. [No locality given; "Mississippi" [? error] (Lamarck, 1822a: 177)]. Syntypes: the specimens illustrated in the works cited by Lamarck (1801: 93); possible syntype: MHNG 1093/93 (Y. Finet, pers. comm. to RHC, 22 August 2002; see also Mermod, 1952: 85). Distribution: unknown.

Remarks. Synonym of *urceus* Müller, 1774, *teste* Valenciennes (1833: 258), Gaudion (1879: 41), Paetel (1888: 481), Sowerby (1909a: 358), Alderson (1925: 10), Prashad (1925: 72) and Mermod (1952: 86).

+ sanjosensis

Pomacea cumingii sanjosensis Morrison, 1946: 6, pl. 1, fig. 1. three small streams (not of contiguous drainage) on the west side of San José Island. Holotype: USNM 542136; paratypes: ANSP 190947 (5 spms.), 215480 (3 spms.), 386773 (4 spms.), BMNH 1951.11.1.6-9 (4 spms.), MNCN 15.05/23733 (2 spms.) (Villena et al., 1997: 76), UF (1 lot, 3 spms.), USNM 598924, ZSM 20012076 (3 spms.) (E. Schwabe, pers. comm. to RHC, 28 July 2002), MCZ, UMMZ. Distribution: Panama.

scalaris

Ampullaria scalaris Orbigny, 1835a: 31. Rio Parana (republica Argentina) ... Guarayos (republica Boliviana) ... provincia Santa-Cruz de la Sierra (republica Boliviana). Syntypes: BMNH 1854.12.4.333-4 (9 spms.), MNHN (4 lots, 10 spms.), MHNG 33488 (1 spm.) (Y. Finet, pers. comm. to RHC, 26 August 2002). Distribution: Bolivia, Paraguay, Argentina, Brasil, Uruguay (Paraguay-Parana drainage) (Pain, 1960: 425).

scholvieni

Ampullaria scholvieni Kobelt, 1914b: 223, pl. 77, figs. 6, 7 [1914e: 178]. Puerto Cabello. Holotype: ZMUH 15880 [destroyed; B. Hausdorf, pers. comm. to RHC, 3 May 2002]. Distribution: Venezuela (Baker, 1930: 5).

Remarks. Synonym of *chemnitzii* Philippi, 1852, *teste* Baker (1930: 5) and Pain (1956a: 74).

semitecta

Ampullaria semitecta Mousson, 1873: 18. nördlichen Süd-Amerika [in publication title]. Type material: location not known to us, not in ZMZ (T. Meier, pers. comm. to RHC, 15 August 2002), not found by us in MNHN (cf.

Dance, 1986: 220). Distribution: Colombia, Venezuela (Pain, 1956a: 75).

semperi

Ampullaria (? *figulina* var.) *semperi* Kobelt, 1914b: 221, pl. 77, figs. 2, 3 [1914e: 176]. [No locality given. "Fundort nicht genau bekannt, doch sicher in Brasilien" (Kobelt, 1914e: 176)]. Type material: possibly SMFD, ZMHB (Dance, 1986: 215), but not found in ZMHB (M. Glaubrecht, pers. comm. to RHC, 1 March 2003); possible syntype(s): ZMUH [all ZMUH dry material destroyed in the second world war; B. Hausdorf, pers. comm. to RHC, 3 May 2002]. Distribution: ? Brasil.

Remarks. In the group of *lineata* Spix, 1827, *teste* Kobelt (1914b: 221).

simplex

Ampullaria simplex Reeve, 1856d: pl. 21, fig. 98a, b. [No locality given.] Syntype: BMNH 20020682. Distribution: unknown.

Remarks. Synonym of *lineata* Spix, 1827, *teste* Pain (1960: 422).

sordida

Ampullaria sordida Swainson, 1823a: pl. 143, figs. 1, 2 [top and bottom figs.]. [No locality given.] Type material: possibly MMUE EM265907 (1 spm.) (H. McGhie, pers. comm. to RHC, 29 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: "Brésil - Rio-Janeiro - Plata" (Gaudion, 1879: 40), French Guiana (possibly introduced; Tillier, 1980: 24).

spirata

Ampullaria [*sic*] *spirata* Deville & Huppé, 1850: 643. [No locality given.] Type material: location not known to us. Distribution: unknown.

Remarks. Name attributed to Orbigny. By comparing it with *Ampullaria aulanieri* Deville & Huppé, 1850, sufficient description was provided to make the name available. Junior primary homonym of *Ampullaria spirata* Lamarck, 1804, which is now placed in family Naticidae (see also Lamarck, 1822b: 549). Not listed by Sherborn (1922–1933) or Ruhoff (1980: 504).

sprucei

Ampullaria Sprucei Reeve, 1856e: pl. 28, figs. 134a, b. Tarapoto, east side of the Andes. Syntypes: BMNH 20020684 (2 spms.); topotype: ANSP. Distribution: Peru (Paetel, 1888: 481).

Remarks. Synonym of *columellaris* Gould, 1848, *teste* Alderson (1925: 54).

strebeli

Ampullaria malleata var. *Strebeli* Fischer & Crosse, 1890: 235. Misantla, provinciae Vera Cruz. Syntypes: ZMHB 23203 (1 spm.; ? = Strebel, 1873, pl. 3a, fig. 13a) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003; F. Köhler, pers. comm. to RHC, 6 March 2003), location of the 5 other spms. listed by Strebel (1873: 26) not known to us. Distribution: East Mexico (Martens 1899: 415).

Remarks. Described by bibliographic reference to Strebel (1873: 25, pl. 3, fig. 13, pl. 3a, fig. 13a, b). Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227). Martens (1899: 415) considered it a full species and gave more detailed locality information.

superba

Ampullaria superba Marshall, 1926: 3, pl. 1, fig. 9 [holotype]. Ciénaga Totuma, Department of Atlantico, United States of Columbia [= Colombia]. Holotype: USNM 362863. Distribution: Colombia (Pain, 1956a: 77).

swainsoni

Ampullaria Swainsoni Philippi, 1852a: 53, pl. 16, fig. 5. [No locality given; Brasil given by Swainson (1831–1832, pl. 64)]. Holotype: MMUE (Swainson, 1831–1832: pl. 64). Distribution: Brasil, Guyana [error] (Baker, 1930: 3).

Remarks. Philippi (1852a: 53) explicitly based his description on Swainson's (1831–1832) figure of "*Ampullaria fasciata* var." [not *fasciata* Swainson, 1822; see *swainsonii* Hupé, 1857], which he copied, and although Swainson had given the locality as Brasil, Philippi stated that the locality was unknown. Baker (1930: 3) mistakenly gave the locality as Demerara [Guyana], which Swainson (1831–1832: pl. 64) had mentioned but in reference to other specimens. See also Swainson (1822c: 12 [Appendix]). Synonym of *lineata* Spix, 1827, *teste* Sowerby (1909a: 354), but treated here as a distinct species, following Baker (1930: 3). See also *hanleyana* Alderson, 1926.

swainsonii

Ampullaria swainsonii Hupé, 1857: 66. Brasil. Holotype: the shell illustrated by Swainson (1821–1822a: pl. 103, fig. 2), possibly MMUE (H. McGhie, pers. comm. to RHC, 28 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: Brasil.

Remarks. Introduced as a new name for *fasciata* Swainson, 1822, which Hupé considered preoccupied by Lamarck, 1816 [also Roissy, 1805]. However, *fasciata* Swainson,

1822 (see Swainson, 1821–1822a: pl. 103) is a misidentification of *fasciata* Roissy, 1805, so Hupé's citation of Swainson's figure constitutes the original description of this species. Junior primary homonym of *swainsoni* Philippi, 1852.

tenuissima

Ampullaria tenuissima Jousseume, 1894: 120, text fig. La Coca, province d'Orient (Équateur) [Ecuador]. Type material: not found by us in MNHN (cf. Dance, 1986: 215). Distribution: Ecuador (Sowerby, 1909a: 358).

testudinea

Ampullaria testudinea Reeve, 1856e: pl. 24, fig. 114. [No locality given.] Syntype: BMNH 1900.2.13.20. Distribution: "Amazons" (Sowerby, 1909a: 358); Brasil (Baker, 1914: 660).

Remarks. Synonym of *lineata* Spix, 1827, *teste* Pain (1960: 422).

tristrami

Ampullaria tristrami Crosse & Fischer, in Fischer & Crosse, 1890: 245. New name for *columbiensis* Reeve, 1856, *non* Philippi, 1851. Distribution: Columbia; also "Pérou [error] - Guatemala" (Gaudion, 1879: 26); also ? Panama.

Remarks. Martens (1899: 413) considered that *tristrami* Crosse & Fischer, 1890, referred to the shell given to Tristram by Salvin, which Tristram (1864: 414) had misidentified as *columbiensis* Reeve, 1856. Martens argued, therefore, that *tristrami* Crosse & Fischer, 1890, should not be accepted as a replacement name for *columbiensis* Reeve, 1856, but should stand as a valid name for Tristram's shell. However, the misidentification notwithstanding, the nomenclatural act of Crosse & Fischer was valid, even despite there already being a new name for *columbiensis* Reeve, 1856 (i.e., *martensiana* Nevill, 1884). Pain (1964: 228), placed Tristram's "*columbiensis*" in the synonymy of *livescens* Reeve, 1856. Because *columbiensis* Reeve, 1856, is treated here as a synonym of *flagellata* Say, 1829, *tristrami* Crosse & Fischer, 1890, is also a synonym of *flagellata* Say, 1829. **N. syn.**

+ unicolor

Ampullaria gigas Var. *unicolor* Philippi, 1852a: 47, pl. 10, fig. 2. [No locality given.] Type material: probably MNHNS. Distribution: unknown.

+ urabaensis

Pomacea cumingi urabaensis Pain, 1956a:

75, text fig. (holotype). Golfo de Uraba, northern Antioquia, Colombia. Holotype and three paratypes (listed with dimensions by Pain (1956a: 75) but without giving their location): NMW.Z.1981.118.00114 (Pain collection, 3 spms. only); additional paratypes: MCZ (1 lot, 2 spms.). Distribution: Colombia.

Remarks. None of the NMW specimens is large enough to be the holotype (H. Wood, pers. comm. to RHC, 30 October 2001), the location of which is therefore unknown.

urceus

Nerita urceus Müller, 1774: 174. in *insulæ Indiae*. Syntypes: the specimen figured by Lister, as cited by Müller, and the specimen(s) "In Museo Moltkiano" (Müller, 1774: 175), location not known to us, not in the Copenhagen Museum (O. S. Tendahl, pers. comm. to RHC, 18 April 2002). Distribution: Brasil, Peru, Ecuador, Colombia, Venezuela, Guyana, French Guiana, Trinidad (Pain, 1960: 426), ? Surinam (Vernhout, 1914: 30) [? error; Geijskes & Pain, 1957: 46, Tillier, 1980: 29], Mexico [error] (Paetel, 1873: 65).

venetus

Ampullaria venetus Reeve, 1856b: pl. 4, fig. 17. [No locality given.] Syntypes: BMNH 20020686 (2 spms.). Distribution: Guatemala (Paetel, 1888: 482).

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

vermiformis

Ampullaria vermiformis Reeve, 1856b: pl. 12, fig. 54. Paraguay. Syntype: BMNH 20020687. Distribution: Paraguay.

Remarks. Synonym of *canaliculata* Lamarck, 1822, *teste* Martens (1857: 210). Synonym of *gigas* Spix, 1827, *teste* Ihering (1898: 49). Synonym of *insularum* Orbigny, 1935, *teste* Sowerby (1909a: 353; 1909b: 363).

vexillum

Ampullaria vexillum Reeve, 1856a: pl. 4, fig. 20. [No locality given; locality unknown (Baker, 1930: 7; Pain, 1950b: 72).] Syntypes: BMNH 20020688 (2 spms.). Distribution: Venezuela (Baker, 1930: 7).

Remarks. Synonym of *puncticulata* Swainson, 1823, *teste* Sowerby (1909a: 356) and Kobelt (1913e: 180), but retained here as a valid species, following Pain (1950b: 72).

vickeryi

Pomacea vickeryi Pain, 1949a: 257; pl. 13, figs. 1, 2. marsh near Buenos Aires, La Plata. Holotype: BMNH 1946.10.2.3; paratypes:

NMW.Z.1981.118.00107 (Pain collection, 2 spms.). Distribution: Argentina.

Remarks. Synonym of *insularum* Orbigny, 1935, *teste* Scott (1958: 295). Neither of the two NMW specimens is large enough to be the paratype for which Pain (1949a: 257) gave measurements; presumably they are two others of the total of 10 that were collected (H. Wood, pers. comm. to RHC, 30 October 2001).

violacea

Ampullaria violacea Valenciennes, 1833: 260. in sylvis Americæ. (Nova Hispania.). Lectotype (Fischer & Crosse, 1888: [explanation of] pl. 46, fig. 4, 4a): MNHN. Distribution: Mexico (Martens, 1899: 415; Sowerby, 1909a: 358).

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 226).

welwitschiana

Ampullaria Welwitschiana Drouët, 1859: 82, pl. 3, figs. 33, 34. la rivière du Diamant, les environs de Cayenne. Type material: not found by us in MNHN, not mentioned by Tillier (1980: 27–29). Distribution: French Guiana.

Remarks. Synonym of *urceus* Müller, 1774, *teste* Tillier (1980: 27).

woodwardi

Ampullaria Woodwardi Dohrn, 1858: 134. Ceylon [in publication title; error]. Lectotype (Prashad, 1931: 168): BMNH 20020689. Distribution: South America (Prashad, 1931: 168).

Remarks. "Probably an abnormal and somewhat eroded shell of *Pomacea (Marisa) cyclostoma*" (Prashad, 1931: 168). This statement does not definitively synonymize *woodwardi* Dohrn, 1858, so it is retained here as a valid species pending further research. Prashad (1925: 85) could only find one shell in the BMNH (as could we) and (Prashad, 1931: 168) mentioned "the unique type", hence designating that specimen the lectotype.

+ yatesii

Ampullaria Yatesii Reeve, 1856b: pl. 6, fig. 28. River Marañon. Type material: not found by us in BMNH. Distribution: Peru (Pain, 1960: 427).

Remarks. Subspecies of *urceus* Müller, 1774, *teste* Pain (1960: 427). Boss & Parodiz (1977: 111) implied that they are synonyms, without formally synonymizing them. The single specimen labeled as *yatesii* Reeve, 1856, in the BMNH type col-

lection does not fit the hardened glue on the board in its box, nor does it look like *urceus* Müller, 1774, nor does it match Reeve's figure. This specimen is therefore not *yatesii* Reeve, 1856, the type material of which must be considered lost.

yucatanensis

Ampullaria yucatanensis Crosse & Fischer, 1890: 110 [see also Fischer & Crosse (1890: 240, pl. 48, fig. 3, 3a)]. San Geronimo, provinciae Yucatan dictae, reipublicae Mexicanae. Type material: not found by us in MNHN. Distribution: Mexico.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

yzabalensis

Ampullaria yucatanensis var. *yzabalensis* Martens, 1899: 420, pl. 24, fig. 9. E. Guatemala: Lake of Yzabal. Syntypes: ZMHB 47109 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 3 March 2002); type material not found by us in BMNH or MCZ (cf. Dance, 1986: 218). Distribution: Guatemala.

Remarks. Synonym of *flagellata* Say, 1829, *teste* Pain (1964: 227).

zeteki

Pomacea zeteki Morrison, 1946: 8, pl. 1, fig. 3. Chagres River near Gatuncilla, Republic of Panamá. Holotype: USNM 542137; paratypes: ANSP 190941 (5 spms.), BMNH 1951.11.1.10-15 (6 spms.), HJ 21515 (1 spm.) (H. Mienis, pers. comm. to RHC, 4 August 2002), USNM 542138, ZSM 20012055 (4 spms.) (E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: Panama (Pain, 1956a: 76).

zischkai

Pomacea zischkai Blume & Pain, 1952: 267, pl. 7. Chapara Region, at 400 m. Bolivia tropica. Holotype: ZSM 20012062 (E. Schwabe, pers. comm. to RHC, 28 July 2002); paratypes: ANSP 212117 (2 spms.), FMNH 35467 (1 spm.), 38001 (3 spms.), MHNG 33486 (1 spm.) (Y. Finet, pers. comm. to RHC, 26 August 2002), NMW.Z.1981.118.00117 (Pain collection, 2 spms.) (H. Wood, pers. comm. to RHC, 30 October 2001), ZMHB 98762 (2 spms.) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003), ZSM 20012050 (24 spms.) 20012051 (2 spms.), 20012052 (101 spms.), 20012053 (155 spms.), 20012057 (9 spms), 20012058 (2 spms.) (E. Schwabe, pers. comm. to RHC, 28 July 2002). Distribution: Bolivia (Pain, 1960: 428).

zonata

Ampullaria zonata Spix, in Wagner, 1827: 1, pl. 2, fig. 1. in rivulis ... Provinciae Bahiensis. Syntype: ZSM 20012056 (E. Schwabe, pers. comm. to RHC, 28 July 2002; see also Fechter, 1983: 221). Distribution: Columbia, Brasil (Gaudion, 1879: 43; Sowerby, 1909a: 359).

Remarks. Authorship is given here as "Spix, in Wagner", following Cowie et al. (in prep.).

Genus POMELLA Gray, 1847

POMELLA Gray, 1847: 148. Type species: *Ampullaria neritoides* Orbigny, 1835 [= *megastoma* Sowerby, 1825], by original designation.

Treated as a full genus, with two subgenera (*Pomella* s. str., *Surinamia*) following Berthold (1991: 24, 250).

Subgenus POMELLA Gray, 1847

Details as for genus *Pomella* Gray, 1847.

americanista

Ampullaria americanista Ihering, 1919: 330, [unnumbered text figure ("Cotipo")]. Río Paraná (Encarnación e Iguazú). Syntype: MACN 8776a (Ihering, 1919: 331). Distribution: Argentina, Brasil, Paraguay (Ihering, 1919: 335; Hylton Scott, 1958: 316).

Remarks. Placed in *Pomella* following Hylton Scott (1958: 316) and S. C. Thiengo (unpublished).

megastoma

Ampullaria megastoma Sowerby, 1825: 44 [name], x [description]. [No locality given.] Holotype ("The only specimen ... that we have seen"): not found by us in BMNH. Distribution: Uruguay (Sowerby, 1909a: 359), Argentina (Ihering, 1919: 333).

neritoides

Ampullaria neritoides Orbigny, 1835a: 31. Río Uruguay (republica Uruguayensi orientali). Syntypes: BMNH 1854.12.4.306-7 (4 spms.), MNHN (2 lots, 3 spms.). Distribution: Uruguay.

Remarks. Synonym of *megastoma* Sowerby, 1825, *teste* Pilsbry (1933: 74) and Hylton Scott (1958: 314).

Subgenus SURINAMIA Clench, 1933

SURINAMIA Clench, 1933: 71. Type species: *Asolene (Surinamia) fairchildi* Clench, 1933

[= *sinamarina* Bruguière, 1792], by original designation.

fairchildi

Asolene (Surinamia) fairchildi Clench, 1933: 71, pl. 7, figs. 1, 2. in the cataract of the Surinam River below Kedjo, Dutch Guiana (100 miles up river from Paramaribo). Holotype: MCZ 80515; paratypes: MCZ 80516, ANSP 161782 (1 spm.), UMMZ (Clench, 1933: 72) [not found by us]. Distribution: Surinam.

Remarks. Synonym of *sinamarina* Bruguière, 1792, *teste* Geijskes & Pain (1957: 46) and Tillier (1980: 17).

schrammi

Ampullaria Schrammi Crosse, 1876: 102. in flumine Oyapock, Guyanae Gallicae. Lectotype (Fischer-Piette, 1850: 150, pl. 5, fig. 81): MNHN. Distribution: French Guiana.

Remarks. Synonym of *sinamarina* Bruguière, 1792, *teste* Tillier (1980: 17).

sinamarina

Bulimus Sinamarinus Bruguière, 1792: 342, pl. 18, figs. 2, 3. la rivière de Sinamari dans la Guyane française. Type material: not found by us, nor by Tillier (1980: 17), in MNHN. Distribution: Guyana, Surinam, French Guiana (Vernhout, 1914: 43; Pain, 1950b: 73, 1952: 31; Geijskes & Pain, 1957: 46).

Remarks. Placed in *Surinamia* Clench, 1933, by Pain (1952: 31) and Tillier (1980: 17).

Incertae sedis in family AMPULLARIIDAE
Gray, 1824

The following species are not well enough known to place them in a particular genus or in some cases to definitively include or exclude them as South American.

bilineata

Ampullaria bilineata Reeve, 1856e: pl. 23, fig. 110a, b. [No locality given.] Type material: not found by us in BMNH. Distribution: unknown.

Remarks. Gaudion (1879: 24) gave "Manille" [= Manila, Philippines] as the locality. Placed in *Pila* Röding, 1798, by Sowerby (1910: 56–57) and, confusingly, considered to be "based on young shells" of *globosa* Swainson (which is now placed in *Pila* Röding, 1798) by Prashad (1925: 72; see also Nevill, 1877: 2) but "certainly the same" as *gracilis* Lea (also now placed in *Pila* Röding, 1798) by Prashad (1925: 81). However, Alderson (1925: 30) treated it as a synonym of *buxea* Reeve, 1856, considering it

"nothing more than a stunted specimen of this variety [*buxea*]". Pilsbry (1927a: 247) treated *buxea* Reeve, 1856, as a synonym of *fasciata* Roissy, 1805 [*Pomacea*] and considered *bilineata* Reeve 1856, as a possible synonym of *fasciata* Roissy, 1805.

equestris

Pila equestris Röding, 1798: 145. [No locality given.] Type material: possibly Art and Natural History Museum, Gotha (Stewart, 1930: 35; Dance, 1986: 206). Distribution: unknown.

Remarks. Not listed by Gaudion (1879) or Sowerby (1916: 71).

fasciata

Ampullaria fasciata Lamarck, 1816: 12 [liste], pl. 457, fig. 3a, b [1822a: 177]. [No locality given. "les rivières de l'Inde, des Moluques et des Antilles" (Lamarck, 1822a: 177)]. Lectotype ["die von Lamarck citirte Figur der Encyclopädie" (Philippi, 1852a: 53)]: MHNG (Mermod, 1952: 88) [not MHNG 1093/92, teste Y. Finet (pers. comm. to RHC, 22 August 2002)].

Remarks. Junior primary homonym of *fasciata* Roissy, 1805. Its correct placement is unclear (e.g., Alderson, 1925: viii, 60) and depends on further study. Mermod (1952: 87) considered it probably a synonym of *ampullacea* Linnaeus, 1758, which is now placed in *Pila* Röding, 1798. Misidentified by Swainson (1821–1822a: pl. 103); see *swainsonii* Hupé, 1857.

gibbosa

Ampullaria gibbosa Paetel, 1887: 478. Unavailable name; *nom. nud.*

Remarks. Attributed to "Sw." [= Swainson], with reference to "Ad. Gen." [= H. Adams & A. Adams, 1853–1854], by Paetel (1887: 478). However, it is not listed by H. Adams & A. Adams (1853–1854), Sowerby (1916: 71), Sherborn (1922–1933) or Ruhoff (1980: 288) and appears never to have been made available. Paetel (1887: 480) listed "*pachystoma* Benson" as a synonym, suggesting that the species is Asian, since Benson worked in India (Naggs, 1997).

hepataria

Ampullaria hepataria Reeve, 1856c: pl. 17, fig. 77. [No locality given.] Syntype: BMNH 20020661. Distribution: unknown.

Remarks. Synonym of *corrugata* Swainson (which is now placed in *Pila* Röding, 1798), teste Nevill (1884: 2). Listed as a "Western Hemisphere" species and possibly a form of *hopetonensis* Lea, 1834, by Sowerby (1909a: 351). However, Alderson (1925: 46) excluded

it from the synonymy of *hopetonensis* Lea, 1834 [= *paludosa* Say, 1829]. Also note the skepticism of Pain (1964: 225) regarding Sowerby's synonymies.

ignota

Pila ignota Röding, 1798: 146. [No locality given.] Type material: possibly Art and Natural History Museum, Gotha (Stewart, 1930: 35; Dance, 1986: 206). Distribution: unknown.

Remarks. Not listed by Gaudion (1879) or Sowerby (1916: 71).

imperfiorata

Ampullaria imperfiorata Swainson, 1823b: 377. [No locality given.] Type material: possibly MMUE (Dean, 1936: 232; H. McGhie, pers. comm. to RHC, 28 July 2002), not found by us in BMNH (cf. Dance, 1986: 227). Distribution: unknown.

Remarks. Sowerby (1916: 70) was unable to identify this species. Swainson (1823b: 377) said "operculum horny?", which would suggest a New World species.

nucleus

Ampullaria nucleus Philippi, 1852a: 25, pl. 7, fig. 1 [1852b: 23]. [No locality given.] Syntypes: ZMHB 1374 (2 spms.; larger spm. = original illustration) (M. Glaubrecht, pers. comm. to RHC, 1 March 2003). Distribution: unknown.

Remarks. Considered close to *crassa* Swainson, 1823, and with a horny operculum (Philippi, 1852a: 25), so included here as a New World species.

obtusa

Ampullaria obtusa Deshayes, 1850: 45, pl. 72, fig. 24. [No locality given.] Type material: not found by us in MNHN or BMNH (cf. Dance, 1986: 210). Distribution: unknown.

pachystoma

Ampullaria pachystoma Paetel, 1887: 480. Unavailable name; *nom. nud.*

Remarks. Attributed to Benson, but not listed by Sowerby (1916: 72), Sherborn (1922–1933) or Ruhoff (1980: 415) and appears never to have been made available. Material not in Cambridge (R. C. Preece, pers. comm. to RHC, 27 August 2002), not found by us in BMNH. May be *pachystoma* Philippi [*Pomacea*] or possibly an Asian species (see *gibbosa* Paetel, 1887).

planorboides

Ampullaria planorboides Cristofori & Jan, 1832: [Section IIa, Pars Ia] 7. Unavailable name; *nom. nud.*

Remarks. Name attributed to Ziegler by Cristofori & Jan (1832: 7), who gave "Austr. N. Holl." as the locality. Martens (1857: 208)

was unsure of the locality, saying "Botanybay (?) Quid [= where]?". Gaudion (1879: 37) gave the locality as "Nouv. Hollande". Not listed by Sowerby (1916: 72). Material formerly in MCSN [destroyed; A. Garassino, pers. comm. to RHC, 5 September 2002]. May not be an ampullariid.

rufilineata

Ampullaria rufilineata Reeve, 1856a: pl. 2, fig. 7. [No locality given.] Syntypes: BMNH 20020681 (3 spms.). Distribution: uncertain.

Remarks. Sowerby (1916: 69) placed this species in *Pila*, giving "Pegu" as the locality (the locality on the BMNH label). Martens (1857: 209) and Gaudion (1879: 39), however, gave Venezuela as the locality. Blume & Pain (1952: 267) considered the location and generic placement uncertain.

sepulta

Pila sepulta Röding, 1798: 146. [No locality given.] Type material: possibly Art and Natural History Museum, Gotha (Stewart, 1930: 35; Dance, 1986: 206). Distribution: unknown.

Remarks. Not listed by Gaudion (1879) or Sowerby (1916: 72).

tristis

Ampullaria tristis Gaudion, 1879: 41. Unavailable name; *nom. nud.*

Remarks. Name attributed to Say, although Say appears never to have published it (Binney, 1858: [237]). "Amérique Septentrionale" given as locality. Possibly *Bulimus tristis* Jay, 1839 [now placed in the genus *Lanistes* Montford, 1810, which is African].

trochulus

Ampullaria trochulus Reeve, 1856c: pl. 14, fig. 66. [No locality given.] Syntype: BMNH 20020685. Distribution: unknown.

Remarks. Listed as a New World species by Sowerby (1909a: 358).

Non-American species in family
AMPULLARIIDAE Gray, 1824

To prevent confusion, we list those non-American ampullariids that have at some time been considered as American or possibly American. The list may not be comprehensive.

adusta

Ampullaria adusta Reeve, 1856a: pl. 3, fig. 11. [No locality given.] Type material: BMNH 20020690 [labeled "Zanzibar"].

Remarks. Nevill (1884: 10) gave the locality as "South America". Confirmed as African (and hence to be placed in *Pila* Röding, 1798) by Alderson (1925: 86).

aperta

Ampullaria aperta Philippi, 1849: 18. [No locality given.] Type material: probably MNHNS.

Remarks. Gaudion (1879: 24) and Paetel (1873: 64, 1887: 476) gave the locality as Venezuela. Considered Indian and placed in *Turbinicola* Annandale & Prashad, 1921 [= *Pila*, *teste* Berthold, 1991: 247], by Prashad (1925: 88).

bruguieri

Ampullaria Bruguieri Deshayes, 1830a: 32. Cayenne [?]. Syntypes: MNHN (3 spms.).

Remarks. One of the syntypes has a calcified operculum and the label says "= *A. kordofana* Parreyss" suggesting that it is a species of *Pila* from Africa (see also Tillier, 1980: 16).

exigua

Ampullaria exigua Philippi, 1852a: 46, pl. 13, fig. 4 [1852b: 26]. [No locality given.] Type material: probably MNHNS.

Remarks. Sowerby (1909a: 349), following Philippi (1852b: 27), first considered that it "may be a variety of *A. crassa*, Swainson" but subsequently (Sowerby, 1910: 58) treated it as a species of *Pila* from Egypt. Listed from Egypt by Paetel (1887: 478).

+ pallens

Ampullaria pallens Philippi, 1849: 17. Indiae orientalis. Type material: probably MNHNS.

Remarks. Gaudion (1879: 36) gave Mexico as the locality. Philippi (1852a: 32) had previously said "wahrscheinlich Ostindien" and Martens (1901: 644) stated that it was from the Philippines. Variety of *virens* Lamarck, 1822 (which is now placed in *Pila* Röding, 1798), *teste* Sowerby (1910: 62).

paludinooides

Ampullaria paludinooides Cristofori & Jan, 1832: [Section IIa, Pars Ia] 7, [Mantissa] 3. Am. mer. Type material: formerly MCSN [destroyed; A. Garassino, pers. comm. to RHC, 5 September 2002].

Remarks. The locality was reiterated as "America meridionalis" by Philippi (1852b: 24) and "Amer. m." by Paetel (1873: 65). Martens (1857: 213) considered it African. Paetel (1887: 480) listed it from "Moulmein" and it was considered Indian by Nevill (1877: 7-9), though perhaps based on misidentifications by the previous authors he cited. Placed in

Pila Röding, 1798, by Sowerby (1910: 57, 62).

prunella

Ampullaria prunella Hupé, 1857: 67, pl. 12, fig. 4, 4a. les parties centrales de l'Amérique du Sud, de Rio de Janeiro a Lima, et de Lima au Para [in publication title]. Syntypes: MNHN (7 spms.; see also Tillier, 1980: 16); possible syntype: MNHN (1 spm.).

Remarks. The syntypes are labeled as from "Cayenne" but have calcified opercula, indicating that this is not an American species (Tillier, 1980: 16).

rotundata

Ampullaria rotundata Say, 1829b: 245. St. John's River in Florida. Type material: "not found" (Baker, 1964: 168).

Remarks. Sowerby (1909a: 357) considered it "most likely a form of *Hopetonensis*" [= *paludosa* Say, 1829], but it was subsequently synonymized with *globosa* Swainson (which is now placed in *Pila* Röding, 1798) by Pilsbry (1953: 60; see also Walker, 1918: 124; Clench, 1955: 107; Clench & Turner, 1956: 120). Spelled by Binney (1858: 147) as "*Ampuluria rotundata*".

Unpublished names in family
AMPULLARIIDAE Gray, 1824

The following names of ampullariids, some of them perhaps referring to American species, have been found by us on museum collection labels. They appear never to have been published and are not nomenclaturally available.

"adjusta". No author. Treated as a synonym of *sordida* Swainson, 1823 in ANSP.

"burmeisteri". Attributed to Ihering. ZMHB 109518 (M. Glaubrecht, pers. comm. to RHC, 1 March 2003).

"gualteriana". No author. "nov. Pernambuco A. *fasciata* Sw. var.?" on label in MNHN.

"miquitensis". Attributed to Spix in UMMZ.

"palmieri". Attributed to Preston in UMMZ.

"tacarigua". Attributed to Pilsbry. ANSP 161137, labeled "Holotype".

"undata". No author. USNM.

"unicolor". Attributed to Martens in UMMZ.

"venezullum". No author. UMMZ.

Non-ampullariids described originally
in family AMPULLARIIDAE Gray, 1824

The following taxa were described originally in *Ampullaria* or *Pomacea* but are not now con-

sidered to belong to the Ampullariidae. Some may be nomenclaturally unavailable. The list is not comprehensive.

Ampullaria acuminata Lamarck, 1804

Ampullaria acuta Lamarck, 1804

Pomacea annularis Perry, 1811

Ampullaria avellana Lamarck, 1822

Ampullaria buccinoidea Young & Bird, 1828

Ampullaria bulimoides Deshayes, 1842

Ampullaria canaliculata Lamarck, 1804

Ampullaria canalifera Lamarck, 1822

Pomacea bibliana Marshall & Bowles, 1932

Ampullaria borealis Valenciennes, 1833

Ampullaria conica Lamarck, 1804

Ampullaria crassa Deshayes, 1830

Ampullaria crassatina Lamarck, 1804

Ampullaria depressa Lamarck, 1804

Ampullaria elongata Bennett, 1831

Ampullaria excavata Lamarck, 1804

Ampullaria faujasii Serres, 1829

Ampullaria fragilis Lamarck, 1822

Ampullaria galloprovincialis Matheson, 1843

Ampullaria hybrida Lamarck, 1804

Ampullaria laevigata Deshayes, 1842

Pomacea linearis Perry, 1811

Ampullaria media Bennett, 1831

Ampullaria patula Lamarck, 1804

Ampullaria perovata Conrad, 1846

Ampullaria ponderosa Deshayes, 1825

Ampullaria proboscidea Matheson, 1843

Ampullaria pygmaea Lamarck, 1804

Ampullaria rosea Spix, 1827

Ampullaria scalariformis Deshayes, 1825

Ampullaria sigaretina Lamarck, 1804

Ampullaria spirata Lamarck, 1804

Ampullaria tasmaniae Guillou, 1842

Pomacea variegata Perry, 1811

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We have seen all the references listed, thereby ensuring accuracy of citation. Dates of publication in some cases have been taken from Evenhuis & Cowie (1995) and Cowie (1998); other dates derive from subsequent research. Citation is given verbatim, unless a publication represents a presentation made at a meeting, in which case it cannot be cited verbatim and a paraphrased title is provided and placed in square brackets. The date of publication, as accurately as could be ascertained from the publication itself and from outside sources, is placed in square brackets at the end of the citation. The dates recorded here are the earliest found for each citation. If the year of publication was different from that printed in the publication itself, the actual year of publication is placed in square brackets. In many instances of works published in parts (Lieferungen, livraisons, etc.), the original wrappers have not been seen, only the complete bound work. Dating has then been obtained from other, secondary sources. The dates that were printed on the original wrap-

pers have therefore not always been verified. The year(s) of publication of the entire work, if different from that which actually appeared in the work (usually on the frontispiece) are therefore not placed in square brackets, pending further research on the original wrappers. If no date other than year could be found, the publication date must be treated as 31 December until such time as evidence of earlier publication is discovered. Sources for dates listed here are held by the first author. When an author published more than one paper in a year, the papers are listed chronologically and the year given a letter suffix corresponding to the citation in the catalog. Where tabular collation is given for publications issued in parts, the date letter for each part is given in the "Date of publication" column. An author's initials are placed in square brackets if not given in the publication. Publications of the International Commission on Zoological Nomenclature are cited with authorship as "ICZN" in the catalog but spelled out in this bibliography.

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4	13–16	97–128	August 1853d
5	17–20	129–160	September 1853e
6	21–24	161–192	October 1853f
7	25–28	193–224	November 1853g
8	29–32	225–256	December 1853h
9	33–36	257–288	January 1854a
10	37–40	289–320	February 1854b
11	41–44	321–352	March 1854c
12	45–48	353–384	April 1854d
13	49–52	385–416	May 1854e
14	54–56	417–448	June 1854f
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1	101	i–vii, 1–256	1 February 1830a
2	101	1–144	1 February 1830b
2	102 [part]	145–594	29 September 1832

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Volume	Livraison	Feuilles	Pages	Plates	Date of publication
1	1	1-19	1-152	1-6	1870
	2	20-38	153-304	7-12	1872
	3	39-48	305-384	13-16	1873a
	4	49-58	385-464	17-20	1873b
	5	59-68	465-546	21-24	1875
	6	69-78	457-624	25-28	1877
	7	79-88	625-702	29-31	1878
2	8	1-10	1-80	32-36	1880
	9	11-16	81-128	37-42	1886
	10	17-22	129-176	43-46	1888
	11	23-32	177-256	47-48	1890
	12	33-39	257-312	49-52	1891
	13	40-49	313-392	53-54	1892
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Part	Date of publication
38	December 1833
39	March 1834a
40	June 1834b

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Lieferung	Pages	Date of publication
1	i–xxvii, 1–104	1 September 1846a
2	105–232	1 December 1846b
3	233–360	1 March 1847a
4	261–488	18 April 1847b
5	489–616	25 May 1847c
6 (part)	617–637	17 July 1847d

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Text published in sections, which are dated on the first page of each section. The sections seem to have been combined into "parts", for which later dates are given by some authors. The earlier dates are taken as the dates of publication in this catalog. The most recent collation is that of Welter-Schultes (1999), who had some later dates than those accepted here.

Section	Pages	Part	Printed date	Date in other lists
1	1–8	550	13 March 1911a	1911
2	9–16	550	19 March 1911b	1911
3	17–24	550	19 May 1911c	1911
4	25–32	556	24 May 1911d	1912
5	33–40	556	15 October 1911e	1912
6	41–48	556	2 November 1911f	1912
7	49–56	557	4 November 1911g	1912
8	57–64	557	25 November 1911h	1912
9	65–72	557	30 November 1911i	1912
10	73–80	560	2 December 1911j	1912
11	81–88	560	5 January 1912a	1912
12	89–96	560	12 January 1912b	1912
13	97–104	560	10 January 1912c	1912
14	105–112	563	30 June 1912d	1913
15	113–120	563	12 September 1912e	1913
16	121–128	563	12 September 1912f	1913
17	129–136	563	1 November 1912g	1913
18	137–144	565	12 November 1912h	October 1913
19	145–152	565	4 March 1913a	October 1913
20	153–160	567	8 July 1913b	November 1913
21	161–168	567	12 July 1913c	November 1913
22	169–176	567	14 July 1913d	November 1913

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(Continued)

Section	Pages	Part	Printed date	Date in other lists
23	177–184	570	4 August 1913e	1913
24	185–192	570	21 December 1913f	1913
25	193–200	570	23 December 1913g	1913
26	201–208	574	29 December 1913h	1914
27	209–216	574	12 January 1914a	1914
28	217–224	576	9 July 1914b	1915
29	225–232	576	15 July 1914c	1915
30	233–236	576	16 July 1914d	1915

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Pages	Plates	Date of publication
1–40	1	1890
41–96	2–5	1891
97–176	6–9	1892
177–248	10–12	1893
-	13–15	1894
249–288	16	1897
289–368	17–20	1898
369–472	21–28	1899
473–608	29–41	1900
609–706, i–xxviii	42–44	1901

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Pages	Date of publication
1–228	8 March 1810
229–414 (with index and title page)	7 September 1811

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Published in livraisons as follows:

Livraison	Pages	Plates	Wrapper date	Date of publication (Evenhuis & Cowie, 1995)
1	-	1, 2	1834	15 May 1835b
3	-	4	1835	15 May 1835c
4	-	3	1835	Before 31 August 1835d
5	-	5, 6, 7	1835	31 August 1835e
6	1-48	10, 12	1834	14 September 1835f
7	49-72	-	1835	23 November 1835g
8	73-104	-	1834	7 December 1835h
9	105-128	9, 11, 13	1834	4 January 1836a
11	129-152	17, 21	1835	18 April 1836b
12	153-176	8	1835	30 May 1836c
13	-	18, 19, 22	1835	-
14	-	20, 25	1835	11 July 1836e
15	-	23	1835	1 August 1836f
16	-	15, 16	1834	26 September 1836g
17	177-184	27, 28	1836	3 October 1836h
18	-	14, 26	1836	7 November 1836i
21	-	31	1836	-
22	-	24, 35	1836	27 February 1837a
23	-	30, 32, 34	1836	3 April 1837b
24	-	35, 37	1836	5 June 1837c
25	-	38, 41	1837	19 June 1837d
26	-	38, 39	1837	7 August 1837e
27	-	40, 45	1837	18 September 1837f
28	-	29, 46	1837	-
29	-	40, 42, 43	1837	6 November 1837h
31	185-232	44	1837	5 March 1838a
32	233-280	47	1837	23 April 1838b
33	281-328	48, 52	1837	6 May 1838c
34	329-376	-	1837	11 June 1838d
35	-	49, 50, 51	1837	15 October 1838e
36	-	55	1835	12 November 1838f
37	-	56	1834	8 April 1839a
38	-	57	1837	29 April 1839b
39	-	58	1836	24 June 1839c
42	-	59	1839	11 November 1839d
43	-	64, 65	1939	21 November 1839e
44	-	54, 60-63	1839	6 September 1841a
46	-	66	1839	8 November 1841b
47	-	68, 69	1839	8 November 1841c
48	-	70	1940	8 November 1841d
49	377-408	-	1840	15 November 1841e
50	-	53, 67, 71	1840	15 November 1841f
51	409-424	72	1841	15 November 1841g
52	425-472	73, 74, 79	1841	15 November 1841h
53	473-488	75, 76, 80	1841	14 February 1842a
82	489-528	-	1846	-
83	529-600	-	1845	-
84	601-656	-	1846	-
85	657-704	-	1846	-
86	705-728	-	1846	-
-	729-758	-	-	-
88	-	83, 85	1842	-
89	-	78, 81	1847	-
90	-	79, 82	1847	-

ORBIGNY, A. [D.] d', [1842]–1853, Mollusques. Tome second. Pp. [i–iv], 1–380, 28 pls., in: R. DE LA SAGRA, *Histoire physique, politique et naturelle de l'île de Cuba*. Arthus Bertrand, Paris.

Published in livraisons. Few details are available; the following are from G. Rosenberg (pers. comm. to RHC, October 2001):

Pages	Date of publication
1–112	1842c
113–128	8 November 1844
129–208	16 February 1848
209–380	1853

PAETEL, F., 1873, *Catalog der Conchylien-Sammlung von Fr. Paetel. Nebst Uebersicht des angewandten Systems*. Gebrüder Paetel, Berlin. [iv] + 172 pp. [after April]

PAETEL, F., 1887–1888, *Catalog der Conchylien-Sammlung von Fr. Paetel. Vierte Neubearbeitung. Erste Abtheilung: die Cephalopoden, Pteropoden und Meeres-Gastropoden*. Gebrüder Paetel, Berlin. [i] + 16 + 639 pp.

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Lieferung	Pages	Date of publication
1–6	1–480	after June 1887
7, 8	481–639	before 22 October 1888

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- PAIN, T., 1953, *Pomacea ghiesbreghtii* (Reeve) in Guatemala. *Proceedings of the Malacological Society of London*, 29(6): 222–223. [16 January]
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- PARODIZ, J. J., 1969, The Tertiary non-marine Mollusca of South America. *Annals of Carnegie Museum*, 40: 1–242. [30 June]
- PARODIZ, J. J. & J. J. TRIPP, 1988, Types of Mollusca in the collection of the Carnegie Museum of Natural History. Part 1. Bivalvia and Gastropoda (Prosobranchia and Opisthobranchia). *Annals of Carnegie Museum*, 57: 111–154. [20 May]
- PATTERSON, B., 1936, *Caiman latirostris* from the Pleistocene of Argentina, and a summary of South American Cenozoic Crocodylia. *Herpetologica*, 1(2): 43–54. [28 December]
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Issued in monthly parts of unnumbered plates and associated text. The plates were numbered by Mathews & Iredale (1912) and monthly dates are here given following those authors. *Pomacea maculata* appears on pl. 12.

However, Cowie (1997a: 84) indicated that *P. maculata* appeared on pl. 11, based on pencilled numbers in the BMNH copy. Neave (1940: 866) indicated that it appeared in signature G5. A full collation is in preparation and confirms that *P. maculata* appeared on pl. 12 in signature G5 (R. E. Petit, pers. comm. to RHC, 16 October 2000).

Plates	Date of publication
[1–4]	1 January 1810a
[5–8]	February 1810b
[9–12]	1 March 1810c
[13–16]	April 1810d
[17–20]	May 1810e
[21–24]	June 1810f
[25–28]	July 1810g
[29–32]	August 1810h
[33–36]	September 1810i
[37–40]	October 1810j
[41–44]	November 1810k
[45–48]	December 1810l
[49–52]	January 1811a
[53–56]	February 1811b
[57–60]	March 1811c
[61–64]	April 1811d
[65–68]	May 1811e
[69–72]	June 1811f
[73–76]	July 1811g
[77–80]	August 1811h
[81–84]	September 1811i

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PHILIPPI, R. A., 1849, Centuria tertia testaceorum novorum. (Contin.) *Zeitschrift für Malakozoologie*, 6(2): 17–26. [May]

PHILIPPI, R. A., 1851–[1852], Die Gattung *Ampullaria*. In *Abbildungen nach der Natur mit Beschreibungen*. 74 pp., pls. A, 1–21, in: H. C. KÜSTER, *Systematisches Conchylien-Cabinet von Martini und Chemnitz. Neu herausgegeben und vervollständigt. Ersten Bandes zwanzigste Abtheilung*. Bauer & Raspe, Nürnberg [= Nuremberg].

Published in parts as follows:

Part	Pages	Plates	Date of publication
104	1–24	A, 1–5	1851
107	25–48	6–11	1852a
110	49–74	12–17	1852a
113		18–21	1852a

PHILIPPI, R. A., 1852b, Centuria quinta testaceorum novorum. (Contin.) *Zeitschrift für Malakozoologie*, 9(2): 20–29. [25 March]

PILSBRY, H. A., 1891, Land and fresh-water mollusks collected in Yucatan and Mexico. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 43: 310–334, pls. 14, 15.

Published in two parts as follows:

Pages	Date of publication
310–328	25 August 1891a
329–334	22 September 1891b

PILSBRY, H. A., 1893, Notes on a collection of shells from the state of Tabasco, Mexico. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 44[1892]: 338–341, pl. 14. [24 January]

PILSBRY, H. A., 1899, A new *Ampullaria*. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 51: 365. [8 September]

PILSBRY, H. A., 1927a, Revision of the Ampullariidae of Jamaica and Cuba. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 79: 247–253, pls. 21–22. [10 September]

PILSBRY, H. A., 1927b, On *Pomacea Perry* (Ampullariidae). *The Nautilus*, 41(2): 63–64. [27 October]

PILSBRY, H. A., 1933, Zoological results of the Matto Grosso expedition to Brazil in 1931, – II. Mollusca. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 85: 67–76, pl. 2. [17 July]

PILSBRY, H. A., 1944, Molluscan fossils from the Rio Pachitea and vicinity in eastern Peru. *Proceedings of the Academy of Natural Sciences of Philadelphia*, 96: 137–153, pls. 9–11. [11 August]

PILSBRY, H. A., 1953, The case of *Paludina multilineata* Say. *The Nautilus*, 67(2): 58–61. [11 November]

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- PILSBRY, H. A. & A. A. OLSSON, 1953, A Colombian *Pomacea* of the *Effusa* group. *The Nautilus*, 66(3): 98–99, pl. 6, fig. 6. [2 February]
- PONDER, W. F. & D. R. LINDBERG, 1997, Towards a phylogeny of gastropod molluscs: an analysis using morphological characters. *Zoological Journal of the Linnean Society*, 119: 83–265.
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- PRESTON, H. B., 1915, *The fauna of British India, including Ceylon and Burma. Mollusca. (Freshwater Gastropoda & Pelecypoda)*. Taylor and Francis, London. xiv + 244 pp. [March]
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Published in livraisons as follows:

Livraison	Pages	Date of publication
1	1–40	26 June 1824a
2	41–88	31 July 1824b
3	89–128	28 August 1824c
4	129–184	18 September 1824d
5	185–232	9 October 1824e
6	233–280	20 November 1824f
7	281–328	18 December 1824g
8	329–376	29 January 1825a
9	377–424	26 March 1825b
10	425–464	7 May 1825c
11	465–496	18 June 1825d
12	497–536	6 August 1825e
13	537–576	1 October 1825f
14	577–616	17 December 1825g
15	617–664	26 April 1826a
16	665–712	14 June 1826b

In the “Préface” to this work (unnumbered page 3), Quoy & Gaimard thank Férussac for the nomenclature of the terrestrial mollusks. In the introduction to the terrestrial and freshwater mollusks, Quoy & Gaimard state (pp. 463–464) that “Nous devons à M. de Férussac la description des espèces que nous avons rapportées, dont il a fait figurer plusieurs dans son magnifique ouvrage sur les mollusques terrestres et fluviatiles.” Thus, authorship of the descriptions of the terrestrial and freshwater mollusks (pp. 465–496, including *Ampullaria*) is Férussac, in Quoy & Gaimard, though Quoy & Gaimard are the authors of the introductory text to that chapter (pp. 462–464).

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This is a lambda book (a book in which plates were published separately, along with unnumbered pages of explanatory text, as the plates were ready). After all plates were completed, they were bound into volumes. Dates of publication as given on the bottom of the explanatory text for each plate are as follows for *Ampullaria*.

Plates	Date of publication
2–4	June 1856a
5–12	August 1856b
13–20	October 1856c
21, 22	November 1856d
1, 23–28	December 1856e

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- ROISSY, F. de, 1805, *Histoire naturelle, générale et particulière, des mollusques, animaux sans vertèbres et à sang blanc*. Tome cinquième. F. Dufart, Paris. 448 pp.
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- SAULCY, E. de, 1854, Note sur l'ampullaire œil d'Ammon, *Ampullaria effusa* (Lamarck). *Bulletin de la Société d'Histoire Naturelle du Département de la Moselle*, 6: 139–147, 1 pl.
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- SAY, T., 1829, Descriptions of some new terrestrial and fluviatile shells of North America. *The Disseminator of Useful Knowledge* [New Harmony], 2.

Published in parts, as follows:

Pages	Date of publication
229–230	29 July 1829a
244–246	12 August 1829b
259–261	26 August 1829c
275–277	9 September 1829d
291–293	23 September 1829e
308–310	7 October 1829f
323–325	21 October 1829g
339–341	4 November 1829h
355–356	18 November 1829i

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- SHERBORN, C. D., 1922–1933, *Index animalium sive index nominum quae ab A.D. MDCCLVIII generibus et speciebus animalium imposita sunt. Sectio secunda a kalendis januariis, MDCCCL usque ad finem decembris, MDCCCL*. British Museum, London. cxlvii + vii + [i] + 7056 + 1098 pp.
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- SOWERBY, G. B. [3rd of the name], [1875], Descriptions of five new species of shells. *Proceedings of the Zoological Society of London*, 1874(4): 598–600, pl. 72. [April]
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Vol.	Plates	Pages	Date of publication
II	67 119	[12] + [63]	1821–1822a
III	120–134	[15]	1822b
	135–182	[48]	1823a

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Authorship of this work and the species described in it are discussed by Cowie et al. (in prep). There is a variant issue also published in 1827 by T.O. Weigel, Lipsiae [= Leipzig].

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Revised ms. accepted 12 March 2003

INDEX OF LISTED TAXA

This index includes all ampullariid names listed in the main body of the catalog. Family-group names are in **BOLDFACE** capitalized letters. Genus-group names are in all CAPITALIZED letters. Unavailable names are in *italics*. Unpublished names are listed in quotes in plain type.

- acuta* Paetel 56, 81
 "adjusta" no author 81
adusta Reeve 80
aldersoni Pain 56
amazonica Reeve 43, 56
americanista Ihering 78
AMPULLARIIDAE Gray 41–81
 AMPULLAROIDES Gray 46
 AMPULLOIDEA Orbigny 46
 AMPULLOIDES Orbigny 46
angulata Jay 56–57
angulata Dunker 56–57
angulata Deshayes 56
angulata H. Adams & A. Adams 57
aperta Philippi 80
arata Fischer & Crosse 57
archimedes Spix & Wagner 57
armeniacum Hupé 57
 ASOLENA Herrmannsen 46
 ASOLENE Orbigny 41–42, 46–50, 60, 78
autanieri Deville & Huppé 57, 60, 68, 75
auriformis Reeve 57
aurostoma Lea 57
australis Orbigny 57
autumnalis Reeve 57
avellana Sowerby 57–58, 81
baeri Dautzenberg 52
balteata Philippi 52
batabana Paetel 58
belizensis Crosse & Fischer 58
bilineata Reeve 78–79
brasiliensis Paetel 58
bridgesii Reeve 42, 58, 62
brownii Jay 46
bruguieri Deshayes 80
bulla Reeve 58
buxea Reeve 58, 78–79
caliginosa Reeve 58
camena Pain 58, 69
canaliculata Lamarck 42–43, 57–59, 62, 65–66, 76, 81
cassidiformis Reeve 59
castanea Deshayes 52
castelloi Sowerby 59, 72
castelnaudii Hupé 59
catamarcensis Sowerby 59
catemacensis Baker 59
cerasum Hanley 57, 59
 CERATODES Guilding 49–51
chamana Hinkley 59
chaquensis Scott 59
chemnitzii Philippi 59, 72–74
chiapasensis Fischer & Crosse 59
chiquitensis Orbigny 50
chlorostoma Sowerby 52
cincta Cristofori & Jan 60
cingulata Philippi 52
citreum Reeve 60
columbensis Jay 60
columbiensis Philippi 60
columbiensis Reeve 60, 68, 76
columellaris Gould 51, 60, 74–75
commissionis Ihering 60
 CONCHYLIIUM Cuvier 51
conica Guppy 52, 81
conoidea Martens 60
consolatrix Ihering 60
contamanoensis Preston 60

- contrarius* Müller 50
cornuarietis Linnaeus 49–51
cornucopia Reeve 60
costaricana Martens 60
cousini Jousseume 61
crassa Orbigny 47–48
crassa Swainson 46–49, 67, 80
crocostoma Philippi 52
crosseana Hidalgo 61
cubensis Morelet 61
cubensis Reeve 61, 72
cumingii King & Broderip 61, 69, 72, 74
cuprina Reeve 42, 53
cyclostoma Spix & Wagner 47–49, 63, 77
dacostæ Sowerby 61
decussata Moricand 60–61, 67
delattrei Fischer & Crosse 61, 67
depressa Say, 62, 71, 81
diffusa Blume 58, 62
dilatata Orbigny 62
disseminata Kay 62
dolioides Reeve 62
dolium Philippi 62
dorbignyana Philippi 62
dorbignyi Philippi 62
dubia Guilding 53, 55
dysoni Hanley 62
EFFUSA Jousseume 42, 51–55, 61, 72–73
effusa Müller 53–54, 56
electrina Reeve 63
elegans Orbigny 63, 72
elongata Dall 49
elongata Orbigny 49, 63
equestris Röding 79
erogata Crosse & Fischer 63
erronea Nevill 63
erythrostroma Reeve 63
eumicra Crosse & Fischer 63
exculpta Fischer & Crosse 63
exigua Philippi 80
eximia Dunker 59, 63
expansa Miller 53
exumblicata Spix & Wagner 47
fairchildi Clench 78
falconensis Pain & Arias 63
fasciata Lamarck 64, 79
fasciata Reeve 64
fasciata Roissy 51, 58, 60, 63–64, 76, 79
fasciatus Guilding 50–51
fasciolata Spix & Wagner 47
FELIPPONEA Dall 41–42, 49–50
ferruginea Martens 64
figulina Spix & Wagner 64, 75
flagellata Say 43, 57–58, 60, 62–77
flatalis Reeve 64
flava Smith 64
fumata Reeve 64
gallardoi Ihering 47
garciae Richards 64
georgii Williams 64
geveana Philippi 53, 55
gevesensis Deshayes 53–54, 56
ghiesbreghti Reeve 64–65, 69
gibbosa Paetel 79
gigantea Barbosa Rodrigues 65
giganteus Tristram 65
gigas Spix & Wagner 42–43, 52, 65–66, 69, 76
glauca Linnaeus 51–56, 61, 72
gossei Reeve 65
granulosa Sowerby 47, 49
guadelupensis Martens 44, 54
guadasensis Anderson 65
gualtieri Orbigny 65
“gualteriana” no author 81
guatemalensis Martens 65
guyanensis Lamarck 63, 65, 70–71, 73
haemastoma Reeve 65
hanleyana Alderson 66, 75
hanleyi Reeve 66
haustrum Reeve 43, 66
hepataria Reeve 79
hollingsworthi Pain 66
hondurasensis Reeve 66
hopetonensis Lea 57–58, 66, 73, 79, 81
ignota Röding 79
iheringi Pilsbry 49
immersa Reeve 43, 66
imperfiorata Swainson 79
impervia Philippi 47–48
innexa Crosse & Fischer 66
insularum Orbigny 42, 57, 64–66, 76–77
intermedia Férussac 54
intermedia Gray 50–51
interrupta Sowerby 60, 66
intropicta Reeve 67
knorrii Philippi 50–51
labiosa Philippi 67
lamarckii Philippi 67
lattrei Reeve 59, 61–62, 67
lemniscata Crosse & Fischer 67
leucostoma Swainson 67
levior Sowerby 67
LIMNOPOMUS Dall 47, 51, 57, 59–60, 66, 68–69
lineata Spix & Wagner 42–43, 59, 62, 64, 67, 70, 72, 75–76
linnaei Philippi 67
livescens Reeve 60, 65, 67, 76
lutea Farfante 67
luteostoma Swainson 51–55
lymnaeaeformis Reeve 67
maculata Perry 41, 43, 51, 61, 65, 68
malleata Jonas 57, 59, 63, 68–70, 73, 75
manco Pilsbry 68
manetou Röding 68

- marginatra* Jonas 68
 MARISA Gray 41–42, 49–51, 77
martensiana Nevill 60, 68, 76
martinezi Hidalgo 68
megastoma Sowerby 78
melanocheila Reeve 68
melanostoma Philippi 69
meridaensis Pain 69
mermodi Sowerby 69
meta Ihering 69
metcalfei Reeve 69
mexicana Martens 69
miamiensis Pilsbry 69
mittocheilus Reeve 69
mittochilus Fischer & Crosse 69
minor Nevill 69–70
minuscula Baker 54
"miquitensis" Spix 81
modesta Busch 70
monachus Crosse & Fischer 70
monstrosa Sowerby 70
monticola Vernhout 47
nais Pain 70
naticoides Orbigny 48
neritina Gmelin 52, 54, 56
neritiformis Dall 49
neritoides Orbigny 78
nigrilabris Philippi 70
nobilis Reeve 70
notabilis Reeve 70
novaegranadae Busch 70
nubila Reeve 48, 70
nucleus Philippi 79
oajacensis Fischer & Crosse 70
oblonga Nevill 48
oblonga Swainson 48, 70
obtusa Deshayes 79
ocanensis Kobelt 70
occlusa Crosse & Fischer 71
ochracea Jay 71
oculuscommunis Gmelin 54
oligista Pilsbry & Olsson 55
olivacea Spix & Wagner 71, 73
olivieri Deshayes 48
orinoccensis Troschel 55
ormophora Morelet 48
oviformis Deshayes 71
pachystoma Paetel 79
pachystoma Philippi 55
pallens Philippi 80
palmeri Marshall 71
"palmieri" Preston 81
paludinoides Cristofori & Jan 80
paludosa Say 42, 57–58, 62–64, 66–67, 69–74, 79, 81
papyracea Spix & Wagner 71
pattersoni Boss & Parodiz 55
patula Reeve 59, 71
pealiana Lea 71
penesma Kay 72
periscelis Röding 72
peristomata Orbigny 72
pernambucensis Reeve 72
pertusa Sowerby 72
petiti Crosse 48
phaeostoma Philippi 72
philippiana Baker 55
physis Hupé 72
physoides Reeve 72
picta Reeve 72
PILIDAE Preston 41, 46
pinei Dall 72
planogyra Pilsbry 50–51
planorboides Cristofori & Jan 79
planorbula Philippi 55
platae Maton 46–49
poeyana Pilsbry 61, 72
POMACEA Perry 41–43, 47, 49–51, 54–56, 58–60, 62–64, 66, 68–70, 72–74, 76–77, 79, 81
pomatia Martens 72
POMELLA Gray 41–42, 50, 78
pomum Philippi 72
porphyrostoma Reeve 73
prasina Fischer & Crosse 73
producta Reeve 73
prouceus Boss & Parodiz 73
prunella Hupé 81
prunulum Reeve 55
pulchella Anton 47–48
pulchra Griffith & Pidgeon 66, 73
puncticulata Swainson 73, 76
puntaplaya Cousin 73
purpurascens Guppy 73
pyrum Philippi 73
quercina Spix & Wagner 73
quinindensis Miller 55
quitensis Busch 69, 74
reflexa Swainson 74
retusa Philippi 74
reyrei Cousin 74
rhodostoma Appun 55
robusta Philippi 74
roissii Orbigny 48
roissyi Orbigny 47–48
rotula Mousson 51
rotundata Say 81
rufilineata Reeve 80
rugosa Lamarck 74
sanjosensis Morrison 74
scalaris Orbigny 56–58, 74
scholvieni Kobelt 74
schrammi Crosse 78
semitecta Mousson 74
semperi Kobelt 75

- sepulta* Röding 80
simplex Reeve 75
sinamarina Bruguière 78
sloanii Férussac 48
solida Busch 49
sordida Swainson 54, 57, 69, 75, 81
sowerbyi Vernhout 49
spirata Deville & Hupé 75
spixii Orbigny 49
sprucei Reeve 75
storeria Jay 49
strebeli Fischer & Crosse 75
superba Marshall 75
suprafasciata Kobelt 55
 SURINAMIA Clench 78
swainsoni Philippi 66, 69, 75–76
swainsonii Hupé 75–76, 79
 “*tacarigua*” Pilsbry 81
tamsiana Philippi 56
tenuissima Jousseume 76
teres Philippi 56, 61
testudinea Reeve 76
tristis Gaudion 80
tristis Guppy 56
tristrami Crosse & Fischer 60, 76
trochulus Reeve 80
 “*undata*” no author 81
 “*unicolor*” Martens 81
unicolor Philippi 76
urabaensis Pain 76
urceus Müller 51, 62–63, 65–68, 70–71, 73–74, 76–77
venetus Reeve 76
 “*venezullum*” no author 81
vermiformis Reeve 76
vexillum Reeve 69, 76
vickeryi Pain 58, 76
villata Sowerby 56
violacea Valenciennes 77
welwitschiana Drouët 77
woodwardi Dohrn 77
yatesii Reeve 77
yucatanensis Crosse & Fischer 77
yzabalensis Martens 77
zeteki Morrison 77
zischkai Blume & Pain 77
zonata Orbigny 49
zonata Spix & Wagner 49, 57, 68, 78